

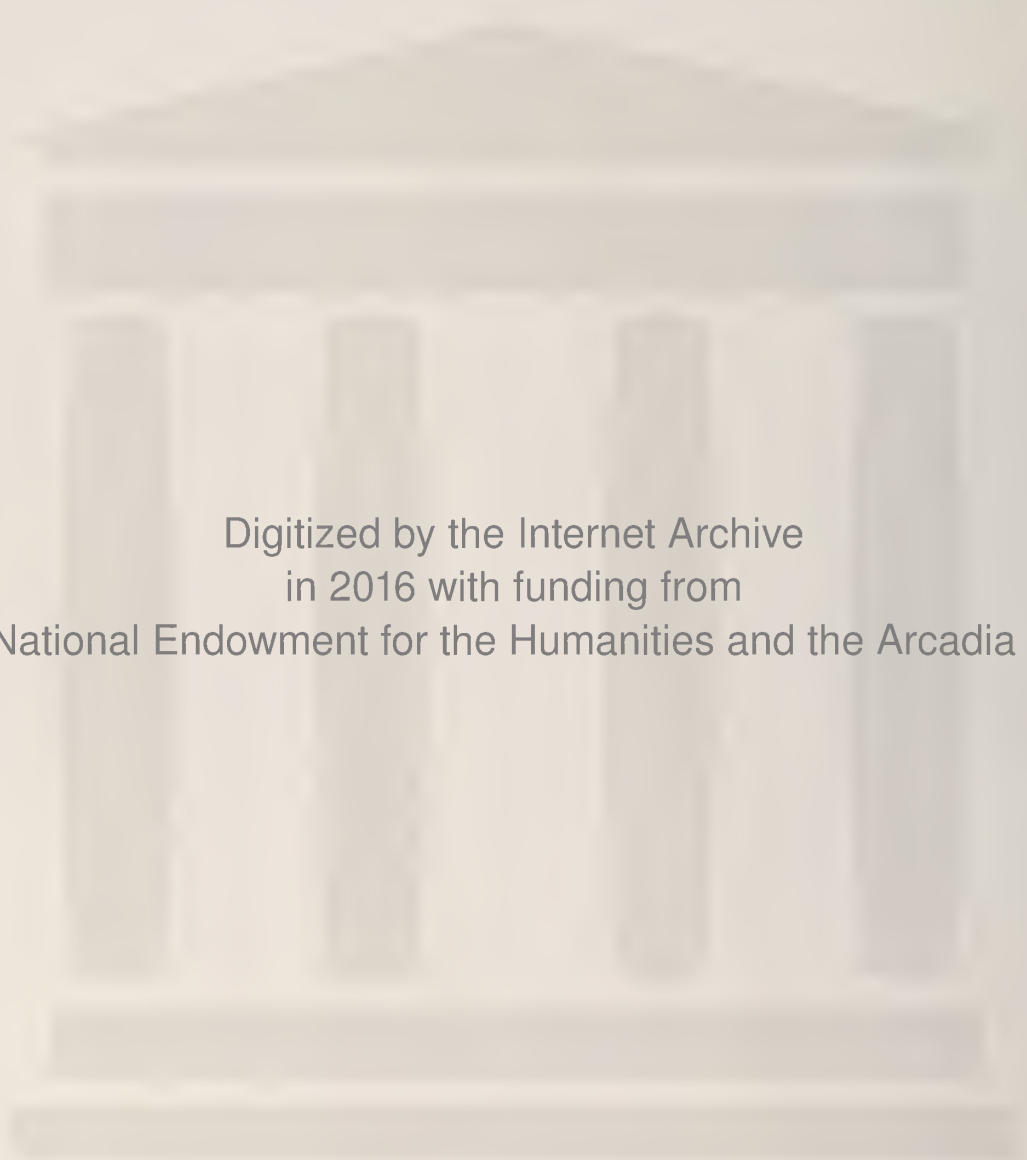
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FERDINAND FETTER, M.D.
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"Powder and Wilderness Skiing"

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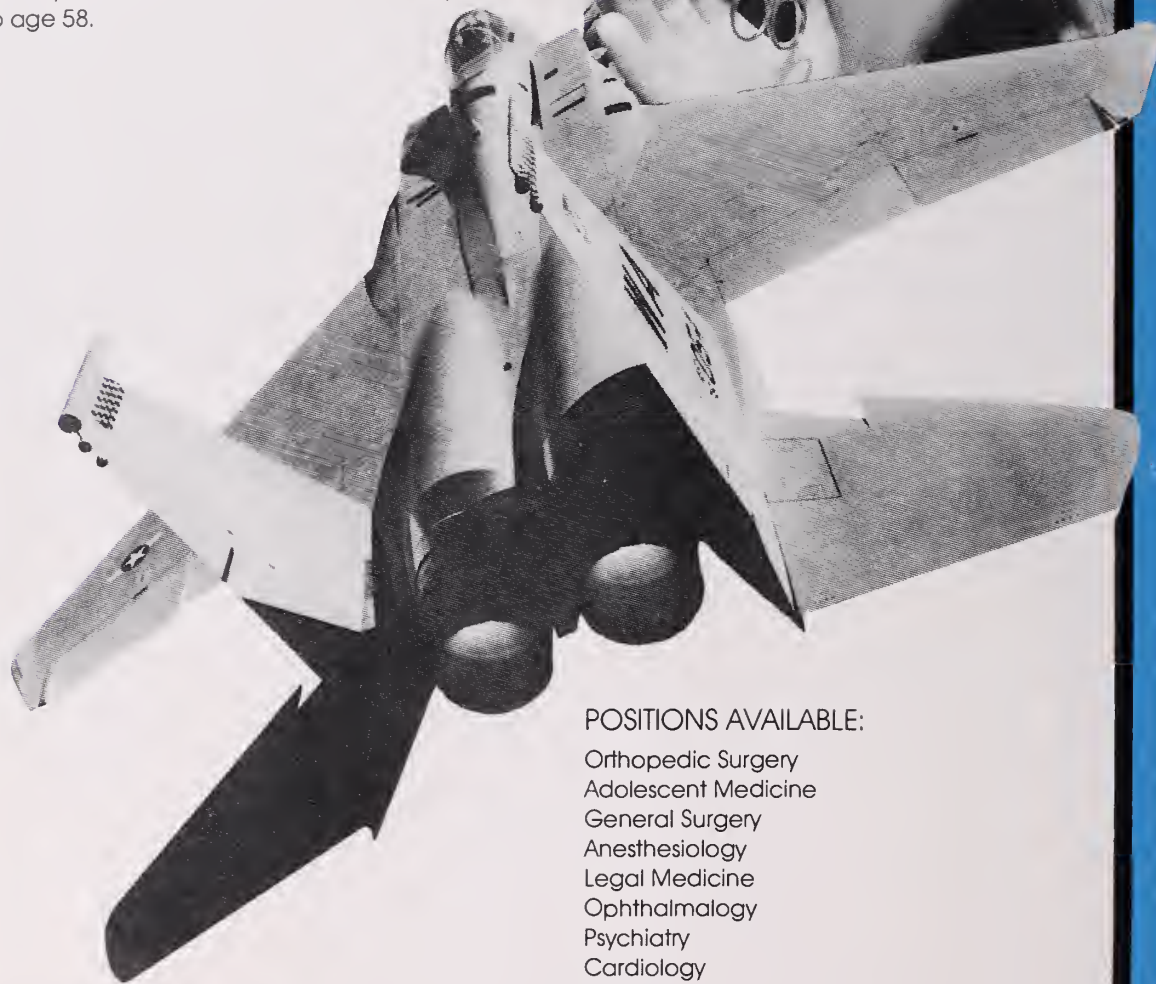
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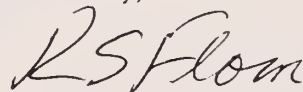
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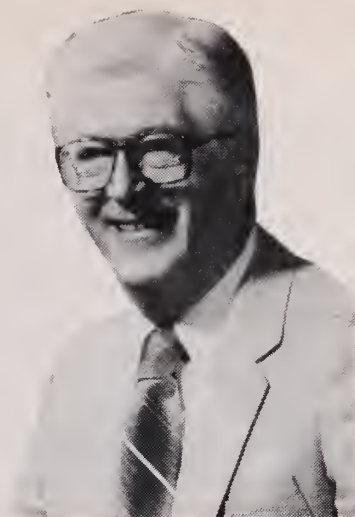
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President's Letter



The Scientific Method — No Panacea

"A young boy named McNair was in great distress, feverish with irruption on his skin, nauseated, throwing up a black greenie vomit, and given to nose bleeds. He was bled and purged but the boy died." . . . "Engaging, active, pious, Kathryn LeMaigne, 33-years-old was desperately ill. She complained of a great heat burning in her stomach. She vomited constantly a black bile. She gasped and sighed. The doctors conferred but they could do nothing." . . . "These infections could obviously be traced to the noxious effluence of the rotting coffee." (Piled on a pier in Philadelphia). . . . "This was Monday, the 19th of August 1793. In less than a week Philadelphia was in shambles."

"One paragraph recommended as preventatives defusing tobacco smoke and sprinkling vinegar throughout the house, placing tarred rope in a room or carrying it in a pocket, and hanging a camphor bag about the neck." . . . "The discharge of cannon which would clear the air." . . . "Many people began lighting bonfires in front of their houses." . . . "Take of Rue, Wormwood and Lavender — with a gallon of best vinegar — rub the temples and loin with this preparation." . . . "Strewing fresh earth in a room to the depth of 2 inches and changing it every day." . . . "Stop ringing the church bells at funerals for their constant tolling had a depressing effect upon the sick." . . . "More than 20 burials each day the rest of the week. Then on Sunday September 8, came a gastly total of 42."

"A woman whose husband had died refused a coffin for him as being too cheap. She bought instead an elaborate one only to die herself the next week and was buried in the cheap box she had rejected." . . . "Captain Sharp, who had fought with distinction in the Revolution, one night heard his wife complain of being ill, and thinking she had the fever, jumped out of bed and shut himself in the other room, where he died in a day or two though his wife recovered."

It is surely impossible for us who live in the age of science to comprehend the world as it existed in the prescientific era of medicine. Probably as close as we can come to gaining such an understanding is to read an account as is found in the book "Bring Out Your Dead" by J. A. Powell, from which I have given a few excerpts above. This is a history of the great yellow fever outbreak in Philadelphia in 1793. The personal agony, the total ignorance, the utter panic, the near total breakdown of all interpersonal relationships and societal organizations that accompanied the countless epidemics throughout the history of civi-

lization are not a part of our lives, at least as it relates to disease.

If Dr. Benjamin Rush or any of his colleagues could have had a glimpse of our array of drugs, surgical procedures, and public health measures he would have beheld them with the same awe, amazement, and lack of comprehension as he would have regarded space travel. Truly the scientific method has changed our world to a degree that is as unimaginable for us who look back across the watershed created by science in the context of history as it would have been for those who lived before us had they had a glimpse

into the future.

One would think that people in our generation who have personally witnessed 90% of the change brought by the scientific method would have an enthusiasm for scientific medical care that would be boundless and that they would reject out of hand non-scientific treatments. One would think that people would understand that the same thought processes and techniques that have allowed us to put a man on the moon, would be the only reasonable and dependable method of combating illness and preserving health. *Yet this is strangely not the case.* Despite the large scale roll-back of the ignorance that surrounded the Philadelphia epidemic in 1793, non-scientific treatment measures are flourishing and gaining adherents at an astonishing pace. (Chiropractic came within a governor's veto in Iowa this year of being mandated in hospitals and insurance plans.) The present array of available medical technology is a towering intellectual and industrial achievement. Why is it less than totally accepted by the public?

I feel it is important for those of us who are delivering medical technology to the public to seek answers to the question posed above. The most constructive answers, I believe, come in the areas of characteristics of the public and in characteristics of the scientific method itself. Some possible factors that have occurred to me are as follows:

1. Many people do not truly understand the scientific method. They do not comprehend the degree of intellectual discipline that is necessary to break through the shackles and delusions that constitute the habit of post-hoc reasoning. ("After this, therefore, because of this.") They are, therefore, easily misled by statements and claims made on behalf of a variety of treatments whose promoters find it easy to establish an aura of pseudoscientific appearance. They do not understand that under the scientific method treatments are rejected if they cannot be demonstrated on a statistical basis to be effective even if such treatments have had a long and previously honored usage.
2. It is part of human nature that expectations usually keep ahead of achievement. That which is available and in common use becomes commonplace. Yesterday's "miracles" are today's accepted norms, and public hostility is quickly pointed at the medical establishment over frustration regarding unsolved problems despite outstanding records of achievement that have occurred within easy memory. (One is now hearing angry statements from the public per-

taining to the problem of AIDS by people who felt similar anger a few short years or months ago when Legionnaire's disease and toxic shock syndrome were as yet unsolved problems. The rapid resolution of these previous problems only seems to heighten the frustration at any delay in solving new and more difficult problems.

3. The scientific method is depersonalizing. The double blind crossover study design is the essence of depersonalization, causing half of the people with whatever group is being tested regardless of their personal circumstances, to run a 50/50 chance of being, for at least awhile, treated with a placebo. Also, each treatment modality is effective in a circumscribed group of people. Individuals outside that defined group are left without hope as relates to that treatment. The requirements of integrity imply that this modality not be offered to those outside this defined group. Many treatments are regarded as successful if they significantly delay the progression of potentially fatal disease. *Scientific medicine, therefore, is paradoxically offering people genuine hope while at the same time defining the limits of that hope.* People find it very difficult to deal with life when hope is gone or even limited. Saint Paul stated "Now abide faith, hope and love, these three, but the greatest of these is love." I think that hope probably runs a close second.
4. The success of treatment in scientific medicine depends on significant alterations of biologic systems. This usually comes at a high cost in money, side effects, or change in life style and many times all three are involved. Procedures used in controlling a disease process that cost a lot of money, make a person feel unwell in other ways, and disrupt habits or life styles, are not apt to be universally popular.
5. Scientific medicine has concentrated on treatment of disease and preserving of life and has been less concerned with making people feel better per se. The dramatic improvement in longevity needs no defense or apology, but we are now in the midst of public debate about where the point of practical limits is in extending life at high costs.

By contrast non-scientific modalities have none of these disadvantages. They exist in an environment established by scientific medicine, and their adherents feel free to take full advantage of these while abandoning the scientific method in the process of their promotion. (Chiropractor's patients have the same

PRESIDENT'S LETTER

benefits of the scientific method having eliminating yellow fever and small pox even as they abandon science in the pursuit of "better health.") Non-scientific treatments do not alter biologic systems and, therefore, are quite free of side-effects. They concentrate on how people feel and are apt to be highly personalized. Finally, they offer hope to all. Laetrile is offered to all with cancer; there are no excluded groups.

Being more aware of these factors that allow for the continued prosperity of non-scientific treatment systems, I believe, can make us more effective as physicians. These systems which often seem so at odds with modern realities exist because they satisfy the needs of many people. We need to seek better ways of satisfying these needs of our patients without sacrificing our integrity as scientific practitioners. Many times there may be no realistic way to treat without

side effects, to be honest yet sustain hope, or to avoid a certain degree of depersonalization in the application of technology, but if we understand the processes involved we will be better equipped to help our patients cope with their problems and ourselves to cope with our own frustrations in our seemingly endless conflict with treatment systems that we know are fundamentally ineffectual.

One last unrelated tidbit. A doctor Philip Physick of Philadelphia, in 1793, offered his services to several families to serve as their physician and supply all services for \$20.00 per year — our first HMO!! So what else is new?



Donald C. Bell, M.D.
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Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

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Harold A. Diehl Award Committee
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Minneapolis, Minnesota 55455
(612) 373-7635

Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.


Legislative Contact Seminar for January

A seminar to prepare MMA members, auxiliaries, and clinic managers for their role as legislative contacts will be held on Saturday, January 28, 1984. The meeting will be held at the Health Associations Center in Minneapolis and will include: "how to" sessions on lobbying, precinct caucuses, and political action committee involvement.

Registration will begin at 8:30 a.m. with sessions running from 9:00 a.m. until 1:00 p.m. The seminar is open to any MMA member who would like to learn more about the political process. For further information and registration materials call Phil Griffin at the MMA office, (612) 378-1875.

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And call us in the morning.



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At first we plan to offer our alternative to recipients of Medicaid as part of a demonstration project beginning in four counties next summer. Later we also intend to enroll other people in Minnesota.

We will give our primary care doctors an incentive for keeping costs reasonable and for coordinating all the care each person receives.

We believe this is the best way of ensuring quality and continuity of care, keeping our patients happy and protecting medicine's tradition of caring for patients without regard for their ability to pay.

You will receive more information soon so that you, too, can become part of the **Minnesota Primary Care Network**.

In the meantime, think about the **Minnesota Primary Care Network** and call us before you commit yourself exclusively to any other alternative. You may contact any of the officers listed here for more information.

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Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: Freestanding Emergency Clinics, Industrialization of Human Services, and Market Segmentation Second of a Series

"Drive-in suburban medical clinics — sometimes called 'McDoc's' — are coming to Minneapolis under the auspices of Abbott Northwestern Hospital. The clinic interiors are as standardized as a chain food operation so that employees can move from one to another without learning where everything is. The chain is one more entrant in the competition for patients in the Twin Cities area . . . The Flashner clinics offer what is called 'episodic care' for problems that do not require hospitalization: sprains, colds, flu, minor cuts, and minor fractures."

Gordon Slovut, MINNEAPOLIS STAR AND TRIBUNE,
"Medical Clinic Chain to Open Soon in Cities,"
NOVEMBER 30, 1983

"Bruce Flashner, founder of a chain of 23 'Doctor Emergency Office Centers,' in New York, Illinois, and California, likens his operations to McDonalds. He wants to deal in what he calls 'the hamburgers' of the medical industry — sore throat and skinned knees. 'We'll let the big medical centers handle the filet mignons,' he cracks. . . . Many hospitals want to treat the minor illnesses as well, particularly in the face of threatening outfits like Dr. Flashners . . . Rather than compete head-on with Dr. Flashner's center, Mr. Caldwell (chief executive at Lutheran General Hospital, Park Ridge, Illinois) agreed to lease him a facility on hospital grounds in exchange for referrals. The hospital says it gained about 330 admissions from the arrangement, while its staff doctors have received about 2880 appointments."

Laurel Sorenson, "Medical Test, Hospitals and Doctors
Compete for Patients with Rising Bitterness,"
WALL STREET JOURNAL, volume LXIII, No. 195, Tuesday, July 19, 1983

NEW YORK, NEW YORK — Relax. I'm not going to compare caring for patients to serving hamburgers. Medicine hasn't sunk that low. Besides, you wouldn't take kindly to the analogy.

Still, we doctors have a thing or two to learn about applying manufacturing techniques to people-intensive services. On that premise hangs this second tale of the industrialization of Medicine in the Twin Cities.

In this second editorial, I am going to talk about marketing segmentation and industrialization of human services as it applies to freestanding emergency clinics. I shall use the Flashner clinics as an example. These clinics and other freestanding clinics — variously known as Convenience Clinics, Docs in the Box, Urgicenters, Episodic Care Clinics, Dispersed Access Centers, Walk-in Clinics, Ambulatory Clinics, Doctor-Hospital Joint Venture Clinics, or Satellite Clinics — are flourishing around the country and are about to open in the Twin Cities.

A Share of the Market

Because of their track record of success elsewhere, I would expect these clinics to capture at least a share of the Twin Cities' episodic care market. They will likely do so

because the idea of seeing a doctor at convenient hours in a no-appointment, no-waiting, no-paperwork, and no-bother setting has marketing power for a certain segment of the outpatient population. If the idea of convenient freestanding ambulatory clinics did not appeal to consumers, these clinics would not have proliferated nationally from 55 in late 1978, to 260 in 1981, to 600 in 1982, to 950 by mid-1983, and to a projected 4500 by 1990.^{1,2}

Growth in the Twin Cities

What may curtail the growth of freestanding clinics in the Twin Cities are these factors: the presence of over 50 existing branch clinics of HMOs and group practices, easy and convenient access to fee-for-service physicians, the existence of large prepaid plans covering a significant portion of the population, and skittish hospital administrators, who, faced with continually declining hospital days, may be reluctant to antagonize physicians by competing with them. Still, the glut of physicians makes it possible to staff freestanding facilities economically, and therefore makes their growth possible. But as I said in the preface to the November issue of MINNESOTA MEDICINE, I believe it is more important to understand the industrialization of Medicine, to adopt its methods that are appropriate, and to organize to accommodate to it rather than to react negatively to it.

Response to November MINNESOTA MEDICINE Issue

Before I plunge into the meat of the article, I would like to tell you why I'm here and how you responded to the November MINNESOTA MEDICINE issue.

I'm here to gather background material for my third editorial, tentatively titled "Advertising and Marketing of Health Care in the Twin Cities." New York is, after all, the home of Madison Avenue, and by learning something now about the national advertising scene, maybe I can write more intelligently later about Health Care Advertising in the Twin Cities.

As readers of MINNESOTA MEDICINE, you responded positively to our November issue "Medicine and the Coming of Corporations." We have received over a thousand reprint requests — from practicing physicians, HMO physicians and executives, corporation managers and executive officers, business reporters, university business school officials, state legislators, hospital administrators, and even members of the United States House of Representatives and Senate. The Minnesota Medical Association has sent copies of my editorial to Minnesota legislators and to Mayo Clinic physicians. As a direct result of the issue, William Swanson, a free-lance writer who is doing a three part series on "The Unhealthy Growth of Medical Costs" for CORPORATE REPORT, has interviewed me to determine what the future may hold for Medicine and its practitioners. Finally, Inter-Study, Paul Ellwood's Minneapolis think tank, has asked to use my editorial as the basis for a seminar for health consultants.

Unprecedented Step

The request for entire copies of November issue has been so great that we have taken the unprecedented step of reprinting the entire issue. You may obtain copies of that reprint for \$2 each by calling Doctor Elaine Nye at 1-612-378-1875 or by writing her at the Minnesota Medical Association, 2221 University Avenue Southeast, Suite 400, Minneapolis, Minnesota 55414.

Letters to the Editor

Rather than describing to you what readers are saying, I shall simply reprint four letters I have received.

EDITOR'S NOTEBOOK

1. "I want to congratulate you on the November 1983 edition of MINNESOTA MEDICINE, both for its general content and your superb editorial. I have heard more discussion of this issue of MINNESOTA MEDICINE, in our hospital medical staff room than I have about any issue of any journal in the past. Unfortunately, much of what is presented is disturbing and depressing, but physicians should know the bad news as well as the good news."

John Meinert, M.D.
Department of Internal Medicine
Willmar Medical Center

2. "As Chairman of the Utilization Review and Referral Committee of Group Health Medical Plan, the Upper Midwest's oldest and largest HMO, I want to take this opportunity to commend you on one of the best issues of MINNESOTA MEDICINE ever published. Especially of note was your excellent editorial as relates to the corporate transformation of medicine in Minnesota. Any physician who does not realize what is happening around him is like the ostrich with his head buried in the sand. All of us must be constantly aware of the importance of providing high quality medical care to our patients in the most effective manner possible.

Again, my congratulations on a superb issue."

James Smith, M.D.
Group Health Plan, Inc.

3. "Just a word of appreciation for your excellent "Editor's Notebook" in the November issue of MINNESOTA MEDICINE. Your essay is judicious and balanced concerning a rapid change in health care delivery wherein voices are often far too shrill. It nicely compliments "The Reality of Competition" by Walter McClure, Ph.D, of the Center of Policy Studies that I have recently seen.

Dr. John Mayne of the Mayo Clinic and I are teaching a graduate course in biomedical ethics here at Hamline this Fall. Last night we dealt with regulation v. market mechanisms, corporate medial chains, HMOs, fee-for-service, etc. It seems that all the ethical issues of the 1980's have \$ signs before them.

Thanks again for the essay, indeed, the entire issue. It will come in handy the next time around when the course is done.

Walter Benjamin Ph.D.
Chairman, Department of Religion
Hamline University

4. "Enjoyed the November issue of MINNESOTA MEDICINE. Your article on "Medicine and the Coming of Corporations" is splendid. Provocative. Thank you for it—it will assist us all as we attempt to find our way in serving.

Ordered 100 copies for our Board Members."

Carl Platou
President and Chief Executive
Officer, Fairview Community Hospitals

Facts on Freestanding Urgicenters

Enough editorial aggrandizement, now for the facts on freestanding urgicenters. As I've already indicated, their numbers are growing rapidly nationally. In 1986, this growth is expected to level off, with 400 centers being added yearly until 1990, when 4500 will be operating. The September 1983 issue of MODERN HEALTHCARE contains these facts on urgicenters.² The facts are based on a study of 155 urgicenters, conducted for the National Association of Freestanding Emergency Centers, by the Orkand Corporation of Silver Spring, Maryland:

- a 1983 projected patient volume of 9.4 to 11.6 million will yield revenues of \$500 million for the industry, with projected revenues of \$2 billion to \$2.5 billion by 1990.

EDITOR'S NOTEBOOK

- Average profits in 1982 were 13.1% of revenues. Of those started in 1980 and 1981, only 18% lost money, but of those begun before 1980, none were losing money. Those founded before 1980 reported a profit of 26% or more of gross revenues.
- Patient volumes are growing 20% annually, with an average of 10,500 patient visits annually for each center. Those started before 1980 had more than 12,500 yearly patient visits.
- Only 1.4% of patient visits were considered life or limb threatening. Conditions treated included upper and lower respiratory tract, infections, fractures, sprains, lacerations, and urinary tract infections. Of the patients seen, 95% were treated and released, and 5% were referred to hospitals.
- Charges for five conditions treated often averaged 37% of that charged in hospital emergency rooms. The 1982 average charge was \$42. In comparison, 50 hospital emergency rooms had an average patient charge of \$115, which included a \$46 facility use charge. Almost 90% of emergicenters charge a single fee (including facility use and doctor's fee).
- For reimbursement, 50% of patients paid through worker's compensation, private insurance, or government-supported public health programs; the rest paid out of pocket, with 12% using credit cards.
- In location, 74% were suburban, 22% urban, and 4% rural. More than 90% were competing with nearby hospital emergency rooms, and 56% were competing with other freestanding emergency centers.
- As far as ownership, 73% were owned by physicians, 7% by hospitals, and the rest had non-physician or non-hospital corporate owners.
- Most (94%) are open seven days a week, an average of 94 hours a week. Only six of the 155 centers were open 24 hours a day. Most of the latter were affiliated with hospitals who offered more traditional emergency room services.
- Of the emergicenters, 43% were in freestanding structures, 16% were in multi-purpose structures, and 15% were in medical office buildings. Newer centers are likely to be freestanding.

Reactions of Twin Cities' Physicians

How have Twin Cities' physicians reacted to the news that at least two Flasher Clinics are opening under the auspices of Abbott-Northwestern Hospital, that Fairview Hospitals have plans for seven to nine in the Dale's shopping centers, that Methodist Hospital is starting one in the Ridgedale shopping center as a joint venture with the Park-Nicollet Clinic, and that other physicians are contemplating starting their own?

Well, as usual, where you stand depends on where you sit. If your office is sitting next to a site where hospital money is constructing an urgicenter, you're likely to grumble about the "hospital has no business practicing Medicine." If your hospital is promising you increased referrals, you may be talking about "the new and innovative changes in a rapidly changing health care environment."

Anyway, to find out how doctors are reacting, I called a cross-section of leading physicians practicing at various hospitals across the Twin Cities. These are opinions from a single physician at a single hospital and do not necessarily represent a cross section of attitudes of that hospital's staff.

- Mt. Sinai in Minneapolis — "Frankly, most of us are horribly upset. We fear they will succeed and destroy solo practice. We are frightened."
- Metropolitan Medical Center, Minneapolis. "We haven't had any reaction at all. Maybe that's because we tend to be a referral center and don't think we'll be impacted."
- Methodist Hospital, St. Louis Park — "Our staff has no official stand. But, as you know, we're opening an urgicenter in a joint venture with Park-Nicollet Clinic, so I suppose you could say urgicenters, at least this one, have staff support."

- Fairview-Southdale Hospital, Richfield — “Well, we’re told by the media and MEDICAL ECONOMICS that these things are inevitable. We’re not so sure. Some of us feel these urgicenters are encroachments that don’t belong. Many of us are primary physicians, and we’re opposed to urgicenters, especially if hospitals build them outside their geographic areas. Instead, we feel hospitals should put up a room adjacent to their current emergency rooms and offer ‘convenience care’ at a lower fee than their emergency rooms.”
- Abbott-Northwestern Hospitals, Minneapolis — “The urgicenters are here, and we think they’re probably going to stay. But we don’t think they’ll necessarily do well. Doctor’s offices will be cheaper and more than competitive. But these freestanding centers may work to our advantage. They will serve as a positive marketing magnet for the hospitals and will increase the flow of patients to doctors within the hospitals. I can’t speak for the staff, but I’m not too apprehensive.”
- Ramsey County Hospital, St. Paul — “The world has changed, Medicine has changed, doctors have changed, patients have changed, and it’s all going to stay changed. People are going to try new and innovative things. In the past nine months, we’ve started a Ready-Care Unit just off the emergency room, with a basic charge of \$15 and an in-and out-turnaround of 30 minutes. We triage people there, sending some home or back to work and others to the emergency room. We’ve had great success, using nothing but bus placards for advertising. Young people are mobile, free, and single, and they don’t have doctors. Half of the people we scrape off the highway or treat for other trauma haven’t any doctor of record. They welcome the convenience and no-hassle aspect of emergency office centers.”
- United Hospitals, St. Paul — “We consider these urgicenters as a little side-action, outside the mainstream of practice. Our hospitals have two of them operating on a limited time basis in Roseville and at the Airport, and our staff is basically supportive.”
- North Memorial Hospital, Robbinsdale — “Keep in mind we’re a primary care and family practice hospital. Our staff is not wildly enthusiastic about urgicenters. Many of us in family practice have already gone to extending our hours to compete. We especially resent hospitals invading our family practice territory. I think urgicenters are crass business ventures. They are singing siren songs, but have nothing to do with the practice of Medicine. I hope they all go belly-up. I cannot conceive of them making it here in the Twin Cities, because I don’t think any untapped markets exist.”
- St. Mary’s Hospital, Minneapolis — “We are not doing anything actively to oppose them. If the hospitals want to staff them, a lot of cheap help is available. I am philosophically opposed to the concept.”
- Mercy Hospital, Coon Rapids — “We have considerable concerns, especially about an outside outfit setting up a competing clinic. Out here, everybody is going to evening hours immediately in their offices.”

My Reaction

How do I react to all of this — the explosive national growth of freestanding emergency office clinics, the local establishment of these units, and the reaction of Twin Cities’ physicians?

Well, I’m sympathetic with the physicians in that the freestanding emergency office clinic movement has crass commercial overtones and detracts from the professionalism of doctors. At the same time, as an editor, I’m striving for a more detached perspective. I view freestanding emergency clinics as a piece of the corporate transformation of the medicine puzzle. As a consequence, I will look at these clinics from the marketing and industrialization aspects.

Competition between Administrators and Physicians

In my first editorial in this series,* I noted there are two extraordinarily tense players in the current health care drama — hospital administrators and practicing physicians. Why should this be? Because the administrators and the physicians compete with each other, yet they depend on one another to survive. They can destroy each other.

Some authorities, such as Jeff Charles Goldsmith, health care consultant and author of "Can Hospitals Survive?",³ says entrepreneurial-minded physicians hold the cards: "Physician entrepreneurism presents an uncomfortable long-term dilemma for the hospital administrator. Insurance plans and health maintenance organizations shopping for bargains may increasingly bypass the hospital in seeking certain types of health care. This may strip the hospital of current profit centers, leaving it a loose organization of unprofitable operations."³

Other players, such as solo practitioners or primary physicians practicing in small groups, believe hospitals hold the trumps because of their administrative skills, their access to capital, and their advertising power (Twin Cities' hospitals are reviving up their advertising budgets and pushing ahead with such campaigns as: "The Loving Arms of Abbott-Northwestern"). These observers see free-standing emergency office clinics as an extension of the not-so loving marketing strategies of powerful hospitals, hungry for the affections of more patients. In any event, the average occupancy of Twin Cities' hospitals fell from 72% to 68% last year, and hospital top-managers will do what they have to do to survive.

Still other people, for example, Paul Ellwood of InterStudy, conceive of these free-standing units as a fringe issue, part of the spin-off of the larger competitive battle. He feels this unit may do well in the short-term, but will wither eventually if they do not establish connections with large pre-paid plans. In other words, the pre-paid plans — not the hospital managers or physicians — will dominate the health care stage.

A Personal Thought

Another personal thought, if I may. Sometimes, when you're looking at something from a position of past traditional dominance and you're worrying about losing that dominance, as we physicians are, you lose sight of the central phenomenon that is occurring. Theodore Levitt, Professor of Business Administration at the Harvard Business School, calls this phenomenon "the industrialization of service."

What physicians may fail to realize is that over the past 20 years, the service sector of the American economy has grown 40% more than the goods-producing sector. Service to people is now where the money is, and managers trained in production line techniques, in monitoring and control of events, and in the systems approach to improving human productivity, are focusing their attention on health care services — the single largest chunk of the vast American service sector. These managers are intent on creating new efficiencies, lower costs, and greater customer satisfactions.

"The MacDonalidization" of Human Services

Among intellectuals, idealists, professionals, and other affluent members of our society, these days it is fashionable to decry the "MacDonalidization" of America. For example, here in Manhattan, about ten years ago, residents of a posh neighborhood were extremely proud of themselves for denying a franchise to MacDonalds in their neighborhood. Yet, despite these efforts and similar ones in Martha's Vineyard and Freeport, Maine, this thriving nationwide chain of hamburger outlets is the supreme example of a brilliant strategy to apply manufacturing and industrial systems to a seemingly mundane service industry.

From 1961 to 1981, MacDonalds' annual sales exploded from \$54 million to \$7.1 billion. MacDonalds accomplished this explosive growth with a system of intricate

*November issue, page 667.

planning and a sharp division of labor — some workers only preparing meat in a central commissary, others only dealing with french fries, still others specializing in breakfasts. At point of sale, the same rational system of specialization prevails and is vigorously followed to produce speed, quality, control, cleanliness, cheerfulness, and low price.

But, you protest, surely these techniques do not apply to medical services. Don't be too sure. Gary Meller, M.D., also a Harvard MBA, founder of Akron, Ohio based Medac, Inc, has formed three low-cost medical care clinics and wants to form 30 or 40 more in the next five years. And Bruce Flashner, M.D., a former accountant for Arthur Young and Company, clearly has a series of standardized franchises in mind. He prefers interchangeable units in prime locations with the right neighborhood demographic characteristics, the right number of primary physicians, and the right traffic patterns.

These approaches, both from M.D.s with business educations and backgrounds, use the systems approach of MacDonald franchises: "Through painstaking attention to total design and facilities planning, everything is built into the technology of the system. The only choice available to the attendant is to operate it exactly as the designer intended."⁵ What we are witnessing is the production-line approach to people-intensive services, with reliance on the resources of the system, rather than on individual choices.

From management's perspective, personal service, such as the individual doctor catering to an individual patient, is an inefficient remnant of the past. Until systems approaches are applied, management professionals feel results in the human service industry:" . . . are likely to be just as costly and idiosyncratic as the results of a lonely journeyman carving things laboriously by hand at home."⁵

To the Service Intreprenuer

To the entrepreneur with a flair for marketing human services, medical care abounds in opportunities to apply manufacturing techniques to service situations. Medical services, or any other people-intensive service, can be industrialized in three ways: via hard technologies, soft technologies, or hybrid technologies.⁴

- Hard technologies substitute machines, tools, and other tangible items for service work. For example, an electrocardiogram may substitute a lower-paid technician for a higher-paid physician using a stethoscope.
- Soft technologies modify the tools employed and substitute an organized preplanned system using paraprofessionals, computers, audiovisual aids, educational programs, and other techniques for individual services. The system itself, designed to produce the right results, is what counts. A fast-service convenient health care clinic, or an HMO outpatient clinic, often uses these soft technologies.
- Hybrid technologies, combining hard equipment with a carefully planned industrial system to bring, efficiency, order, and speed to the service process, are still in their infancy. But the hybrid technologies, according to Professor Levitt in his recent book, "The Marketing Imagination"⁶, are precisely where the special opportunities for marketing human services lie. He gives the following as "highly promising areas" for "managerial rationality". I quote:

"1. Specialized, highly automated medical diagnostic clinics. The Damon Corporation operates 125 such clinics throughout the nation, with the help of modern machines, 125 salaried M.D.s, 22 Ph.Ds, and 1,400 medical technologists performing a wide range of diagnostic tests that formerly required patients to visit several doctors and clinics at costs of time and money several multiples above Damon's.

"2. Prepared health service centers, comprising a wide range of specialists who can be kept fully employed at their specialties. Pioneered by Kaiser Foundation in Oakland, California, there are several hundred HMOs (Health Maintenance Organizations) all over the country whose members prepare annual "dues" for easy access to medical specialists and technicians working in central clinics equipped with the latest technologies and

employed full time, without intervening administrative burdens at their respective specialties, and only their specialties . . . There are now more than a hundred ASFS (Ambulatory Surgical Facilities) in the United States. They typically are equipped to perform some 125 low-risk operations on the healthy, low-risk patients."

The Key to Industrialization

The key ingredient for "the industrialization of service" in medicine — for HMOs, for freestanding emergicenters, for automated diagnostic clinics, and for ambulatory surgical facilities — is "volume" — the magnitude of services needed to achieve efficiency, to use systems, and to employ technologies that guarantee reliable, rapid, convenient, and low-unit costs. The trick is to satisfy the patients in the process without making them feel they are part of a production-line. With proper planning and anticipation of the patients' wants, patients can be satisfied.

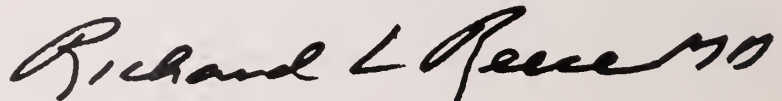
Marketing Segmentation

Lastly, a note on marketing segmentation. "Everybody knows" the Twin Cities' health care market is "saturated," "mature," or at the very least, "fiercely competitive." That's why, the argument goes, marginal Twin Cities' hospitals are crumbling, hospitals and clinics are consolidating, local HMOs are seeking greener pastures elsewhere, physicians are dispersing to the hinterlands, and even nationally-known institutions — such as the University of Minnesota and the Mayo Clinic — are raising their heads and asking: "Where are our future patients going to come from?"

But where health care "experts" see problems, freestanding emergicenter advocates sense opportunities. They see a young, mobile, often affluent, and basically healthy baby-boom generation seeking short-term non-binding care. They see the denizens of subterranean economy, without access to traditional health care benefits, seeking episodic care. They see working couples — each employed full-time, each busy, and often without children — looking for convenient care. And they see the national statistics of free-standing emergency office clinics, which show that 50% of their clients are paying for their care with out-of-pocket money or major credit cards.

Closing Comments

I have considered problems and opportunities of introducing freestanding emergency office clinics into the Twin Cities' health care market. I have done so within the context of the corporate transformation of medicine in Minnesota. Because of the special Twin Cities' circumstances — more than 50 suburban branches of existing health care corporations; the willingness of present fee-for-service practitioners to change and to compete in services, in hours, and in price; the tentativeness of hospital administrators to compete head-on with their medical staffs; and the reality that a large proportion of the Twin Cities' population already belongs to prepaid plans, freestanding emergency clinics may be too late for this market. Or, it is safe to say, their chances for success are dimmed. Still, the concept of these new freestanding clinics have something to teach physicians about new markets, about the importance of standardized care, and about the efficiencies and promises of the production-line approach in creating and satisfying health-care consumers.



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Kinetic Heart Pumping

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A.M. BILGUTAY, M.D.*; W.D. KELLY, M.D.*; O. ARNAR, M.D.*;
and M.B. PLIAM M.D.*

"Application of Better Engineering Principles Leads to Improved Patient Quality Care"

A large consecutive series of heart surgical operations using a new heart pump has been reviewed. The new pump, manufactured in Minnesota, is based on the kinetic volume displacement (roller) pump. No disadvantages of this new pump as compared to roller pumping were recognized in 1027 cases.

THE PUBLICITY OF the artificial heart implantation in the human subject has reawakened attention to man's 50-year attempt to substitute a mechanical pump for the human heart including the temporary artificial substitute used during open heart surgery.

During the pioneering efforts to develop the heart lung machine by Dr. John Gibbon in Philadelphia, Dr. Clarence Dennis in Minnesota and Dr. William Adams in Chicago, the primary concerns were directed toward the oxygenator. Pumps were a necessary but secondary concern, and all were of the volume displacement type. Several types of volume displacement pumps were used to move blood. Some of these included the Dale-Schuster Device used in the laboratories in the 1940s. While the Sigma-Motor Multicamb pump was popular during the early 1950s. By 1960 various forms of the roller pump were almost universally employed and for over 20 years have remained unchanged in that position.

A new concept using the principle of kinetic pumping arrived in 1976 in the form of a Torroidal pump developed by Kletschka and Rafferty and manufactured by a Minnesota Company.† Like all kinetic pumps it uses centrifugal force to generate energy to move blood in a column.

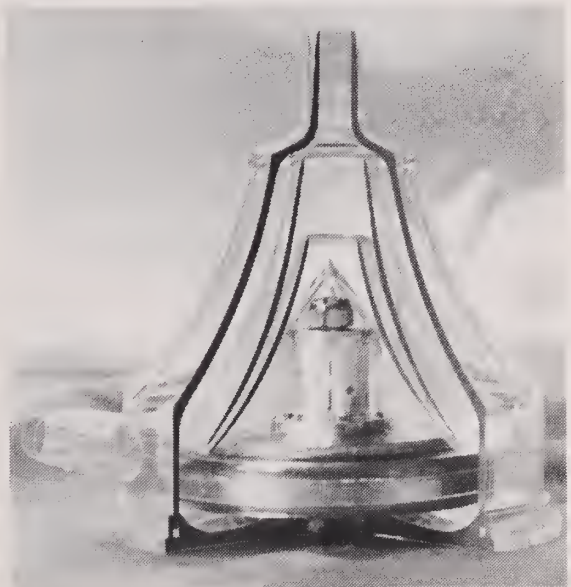
Having experienced several problems of volume displacement pumping such as air embolus generation, disruption of tubing connectors, fracture of tubing in the pump housing, and so forth, the biopump was studied by our perfusion group as an alternative to volume displacement pumping, first in the animal laboratory and then in the operating room initially as a clinical pilot study with roller pumps standing by. Next, a consecutive case study was re-

viewed.¹ The biopump then became the sole pump for open heart surgery in one hospital, and finally having proved its superiority it has become the sole heart pump for open heart surgery used by our group of surgeons in four Minneapolis Medical Centers.

Clinical data on 1027 consecutive patients between 1977 and January 1982 has now been reviewed and forms the basis for this report. In durability the biopump behaved well. Not a single case of mechanical failure occurred.

Clinical Material

The study took place in four medical centers with eight surgical teams participating (Table 1). It included 787 male patients and 233 women undergoing various forms of heart surgery. Eight hundred eighty-



Kinetic Pump — "Biopump"

*Thoracic Cardiovascular Surgery, PA, Minneapolis, Minnesota.
†Biomedicus, Inc., Minnetonka, Minnesota

one patient had coronary artery bypass, 200 patients had valve replacements, 46 patients had ventricular aneurysm repair, 100 patients had combined surgical procedures. Forty-two cases were redo cardiac operations. The average hospital stay was 13.01 days.

Laboratory Values

The laboratory values are listed in Table 2. Platelet counts and plasma hemoglobin values are close to prebumping standards, showing minimal alteration in spite of the aggressive use of cardiectomy suction during all cases. Chest drainage as a reflection of hematological competence has been previously reported in a consecutive case study.¹ It was 624.94 cc. in eight hours and 1189.74 cc. total per average case in this series. Fifty-six patients returned to surgery for postop bleeding. Positive end expiratory pressure was not used to decrease sternal bleeding.

Perfusion Measurements

Cardiopulmonary perfusion was conducted using the biopump with three different oxygenator types: the Bently Q-200, the Bently BOS and the Sci-Med Membrane. No arterial filters were used. The average perfusion time was 2.24 hours, at a flow of 4,221.81 cc/m. The arterial cannula was an L shaped plastic catheter inserted into the ascending aorta. The cannula gradient was 124.84 mm/Hg. with a mean systemic pressure of 87.01 mm/Hg. and a line pressure of 203.51 mm/Hg. Cold cardioplegia was recorded in

943 of the cases.

Clinical Results

In order to establish prognostic cardiac care indices, high risk patients were separated from normal risk patients according to the criteria for high risk coronary artery surgery set forth by the Cardiac Care Data Group of the Metropolitan Health Board (1980) (Table 3).

Of the 1027 patients, 462 were considered high risk including 70 patients who satisfied two criteria and 11 patients who satisfied three criteria.

The total operative and hospital mortality was 51 patients.

Morbidity is divided into six categories:

1. Hematologic — 56 patients as mentioned above returned to the operating room for bleeding, 47 patients returned once and nine patients returned

TABLE 3

Criteria for "High Risk" Coronary Artery Surgery

1. Unstable angina on admission
2. Myocardial infarction within last 60 days
3. Age greater than 74
4. Ejection fraction (from cardiac-catheterization report) less than 40 percent
5. Surgery within 24 hours of admittance (emergency patients or unscheduled admittance only)
6. Preoperative use of aortic balloon procedure

*Cardiac Care Data Group, 1980
Metro Health Board
Metropolitan Council, Minnesota.

TABLE 1

Types of Cases

Coronary Bypass = 881

One Vessel.....	124
Two Vessel.....	238
Three Vessel.....	388
Four or More Vessels.....	131

Ventricular Aneurysm = 46

Redo Operations = 42

Combined Procedures = 100

CAB + Valve Replacement.....	59
CAB + Ventricular Aneurysm.....	39
CAB + VR & VA.....	2

Valve Surgery = 200

Aortic Valve Replacement.....	84
Mitral Valve Replacement.....	73
Tricuspid Valve Replacement.....	6
Multiple Valve Replacement.....	13
Valvuloplasty.....	24

TABLE 2

Laboratory Values

	Preop Average	Begin Perfusion Average	End Perfusion Average
Hgb	14.07 (1001 pts.)	8.77 (964 pts.)	8.76 (968 pts.)
Plasma Hgb	13.02 (6 pts.)	6.35 (258 pts.)	29.77 (259 pts.)
Platelets	245.76 (938 pts.)	131.11 (813 pts.)	112.11 (950 pts.)
NA	140.56 (914 pts.)	143.25 (322 pts.)	143.73 (303 pts.)
K	4.08 (1005 pts.)	4.36 (292 pts.)	4.15 (932 pts.)

twice.

2. Wound Healing — Sternotomy infections occurred in seven, wound dehiscence in five and sternal seromas in six.
3. Cardiac — Arrhythmias were the most common cardiac disorder occurring in 149 patients. Approximately 50% of these were atrial in origin. Cardiac arrest occurred in 19 patients. Cardiac tamponade in 36 and congestive heart failure recorded 16. Myocardial infarction (defined by a combination of CPK enzyme elevation and persistent EKG changes) was diagnosed in 50 patients. Temporary epicardial pacemaker was required in 46 patients at surgery and the Intra-aortic balloon pump was required to support the myocardium in 36 patients coming off cardiopulmonary bypass.
4. Renal — Renal failure occurred in eight patients, two patients requiring dialysis.
5. Neurological — Neurological complications included seizures in five patients. Three patients suffered encephalopathy. CVAs occurred in nine. Confusion was recorded in 16 patients and four suffered depression.
6. Gastrointestinal — GI bleeding occurred in 10. One patient succumbed from this complication.

Discussion

A pump is a device that uses mechanical force to transport or compress fluids. Pumps are classified according to the way energy is imparted to the fluid. The basic methods are (1) volumetric displacement, (2) addition of kinetic energy, and (3) use of electromagnetic force.² In order to use electromagnetic force, the fluid being pumped must be a good electrical conductor.

Pumps in which the volumetric displacement is accomplished mechanically are called positive displacement pumps.

Kinetic energy may be added to a fluid either by rotating it at high speed or by providing an impulse in the direction of flow. This transfer of energy requires the use of a rapidly rotating impeller. Kinetic pumps are a much more recent development than reciprocating positive displacement pumps. Even though the first centrifugal (kinetic) pump was introduced about

1680, the bulk of the development has occurred in this century.

Broadly speaking, positive displacement pumps provide relatively low volume at high pressures while kinetic pumps produce relatively high volumes at low pressures. This is quite suited for heart substitution.

Kinetic pumps also have several advantages over volume displacement pumps. They do not continue to generate pressure when operated against a closed discharge, thus avoiding high line pressure generation, which might result in disruption of connectors, even if the tubing becomes occluded.

They also avoid laceration of tubing through wear and tear in the pump housing that can occur with roller pumps.

Microair embolus originating from the pump is unknown in the Torroidal pump. Small bubbles of air, should they occur, remain in the center of the vortex and are not expelled into the arterial line.

Likewise a large bolus air embolus is impossible from the kinetic pump. A large mass of air merely fills the pump allowing the existing line pressure to remove the air bolus retrograde back into the venous reservoir. If existing arterial line pressures are low the air block is removed by momentarily separating the pump from the pump housing and rotating the pump to allow the air bolus to escape back into the venous reservoir. Air emboli can occur during open heart surgery from sources other than the pump, but it is estimated that 50% of these tragedies originate from the roller pump.³ Finally, spallation or the chipping of plastic microparticles of polyvinyl chloride or polyethylene from the inner surface of the tubing in the roller pump can be avoided with kinetic pumping.⁴

Conclusions

A consecutive series of 1027 patients using a new heart pump for open heart surgery is reviewed. This records the first large series experience with kinetic pumping. In its hydraulic capabilities as a heart substitute the kinetic pump surpasses the volume displacement pump in many parameters.

Acknowledgment

Computer Services at North Memorial Hospital

This study was supported by a grant from the Cardiac Research Committee Foundation.

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Cytomegalovirus Inclusion Bodies in Breast Cancer

Report of Three Cases

EMIL MARO SCHLEICHER, Ph.D., A.A.S.C.A.*

The presence of cytomegalovirus inclusion bodies in the breast cancer of three women, ages 78, 47, and 67 is presented. Cytomegalic inclusion disease could not be established. A 3 cm nodule was excised from the breast of Case 1. The pathologic diagnosis was "poorly differentiated infiltrating adenocarcinoma." A conspicuous infiltrate of lymphocytes and plasma cells was noted. A total mastectomy was done. One lymph node contained metastatic adenocarcinoma. In the tumor imprints and cryosections, intracytoplasmic and intranuclear inclusion bodies in tumor cells were seen. The tumor of Case 2 was diagnosed "infiltrating ductal carcinoma". The tumor of Case 3 was diagnosed "infiltrating ductal carcinoma". Antibodies against the virus were successfully demonstrated by means of a sensitive immunofluorescent technique. Case 1 received no radiation or chemotherapy. She enjoys good health. No data is available pertaining to therapy and health status of Case 2. Whether Case 3 received radiation or chemotherapy or both is unknown. The presence of cytomegalovirus inclusion bodies in breast cancer in the absence of clinical cytomegalic inclusion disease suggests a non-accidental association of the herpes virus. Whether the virus is oncogenic *in vivo* is unknown.

GOODPASTURE AND TOLBOT¹ were the first to report cytomegalovirus inclusion bodies in the salivary glands of children. The bodies were subsequently found in kidneys, liver, intestine, pancreas, adrenals, brain,² human breast milk,³ and bone marrow⁴. The presence of cytomegalovirus inclusion bodies in breast cancer heretofore has not been reported as con-

firmed by failure to uncover identical or similar cases in the literature. Jawetz et al.⁵ states the virus is human specific and belongs to the Betaherpesviruses. Whether the virus is oncogenic *in vivo* is unknown.

Case 1

This 78-year-old woman noted a hard nodule in her right upper breast in early November, 1981. On November 18, 1981 a solid nodule was excised measur-

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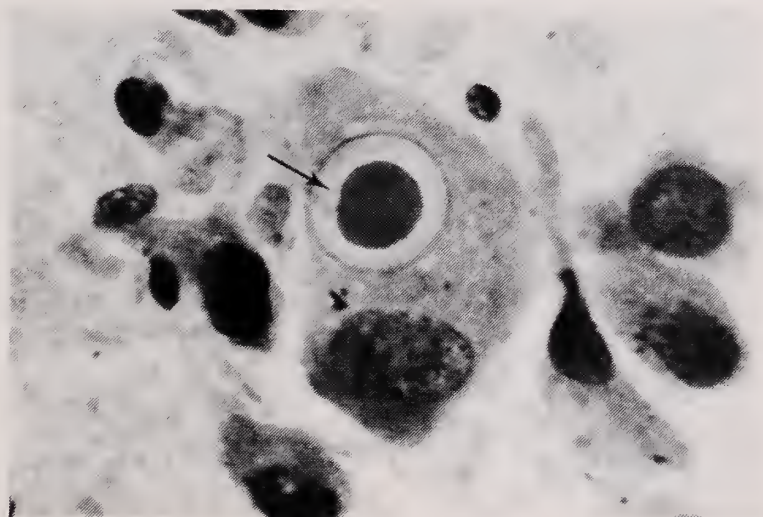


Fig. 1 — Tumor imprint. At arrow cytomegalovirus inclusion body in a large tumor cell. Connective tissue stain $\times 1200$

ing about 3×3 centimeter. The pathological diagnosis was "poorly differentiated infiltrating adenocarcinoma". The tumor was infiltrated by small lymphocytes and plasma cells. A right mastectomy was performed on November 20, 1981. One axillary node was involved with adenocarcinoma. No other malignant growth was seen in the excised breast. Imprints and cryosections stained with a modified connective tissue stain⁷ showed various sized cytomegalovirus inclusion bodies in tumor cells. Figures 1 and 2. The bodies were morphologically identical to those characterizing cytomegalic inclusion disease². However, this clinical entity could not be established. A sample of the tumor was submitted to our Isotope-Research Laboratory for an Estrogen-Progesterone assay⁶. Both assays were negative.

Case 2

This 47-year-old woman presented with a large mass in her right upper breast. The pathologic diagnosis of the surgically excised tumor was "infiltrating ductal carcinoma". A moderate infiltrate of lymphocytes and plasma cells was noted. A sample of the tumor was submitted to our Isotope-Research Laboratory for an Estrogen and Progesterone assay. The former was $+17$ fm/mg and the latter $+10$ fm/mg. Antibodies against the virus were demonstrated with a specific immunofluorescent technique⁶. Tumor imprints and cryosections were stained with a modified connective tissue stain⁷. In these preparations cytomegalovirus inclusion bodies were seen. These were morphologically identical to those presented in Figures 1 and 2. Clinical cytomegalic inclusion disease could not be established. No data is available

pertaining to therapy and health status.

Case 3

This 67-year-old woman presented with a lump in her left breast. The mass was diagnosed "infiltrating ductal carcinoma". A sample of the tumor was submitted to the Isotope-Research Laboratory for an Estrogen and Progesterone assay. The former was 8 fm/mg with the latter 10 fm/mg. Imprints and cryosections of the tumor stained with a connective tissue stain⁷ showed various sized cytomegalovirus inclusion bodies morphologically identical to those of Case 1 and 2. Antibodies against the virus were demonstrated with a specific immunofluorescent technique⁶. Cytomegalic inclusion disease could not be established.

Material and Methods

It is our routine to prepare several tissue imprints and cryosections from breast cancers submitted to our Isotope-Research Laboratory for Estrogen and Progesterone assays⁶. This serves: (1) to assure the tissue corresponds to the designation on the request documents, (2) to gain an overall view of the histology and (3) serves as a control of the assay results.

Several imprints are stained with Wright's blood stain and two to three cryosections with Hematoxylin-Eosin (H&E). Some imprints and cryosections are stained with a modified connective tissue stain⁷. The latter allows an evaluation of the fibrous stroma. The degree of pleomorphism has proven an aid in the search for the cytomegalovirus inclusion bodies in breast cancer. Figures 1 and 2. The inclusion bodies (nucleic acid core) were morphologically identical to

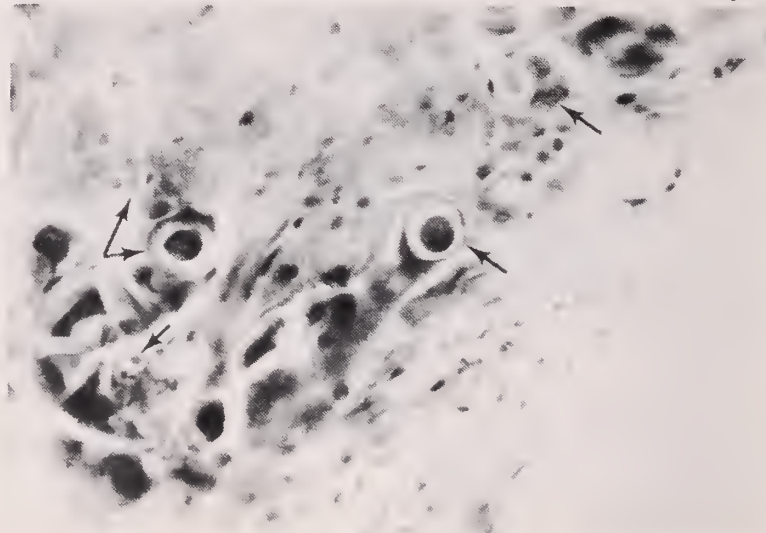


Fig. 2 — Cryosection 4 micra thick. Arrows point to intracytoplasmic and intranuclear cytomegalovirus inclusion bodies in tumor cells. Connective tissue stain $\times 190$

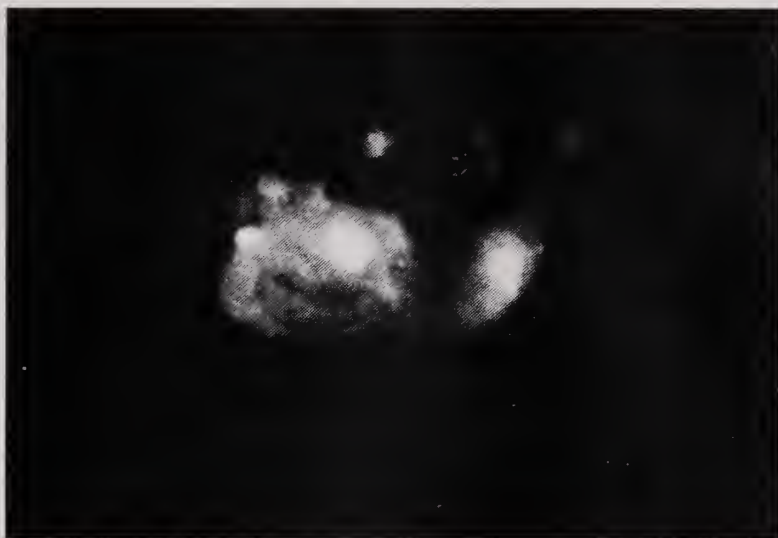


Fig. 3 — Intracytoplasmic cytomegalovirus inclusion bodies in tumor cells. Immunofluorescent stain $\times 150$

those characterizing cytomegalic inclusion disease². Stained with the connective tissue stain the bodies ranged in color from acidophilic, polychromatic, to deep greenish blue. The periphery of the envelope tends to be deep basophilic. Whereas the capsid stained faintly light reddish brown to light greenish blue or not at all. These tinctorial variations could reflect variations of the isoelectric points of a complex lipidprotein make up. The greater number of tumor cells contained one to several up to six bodies either in the cytoplasm or the nucleus (Figure 2). No inclusion bodies were present in tumor cells enclosed in necrotic material. To prove the bodies were derived from the virus a specific immu-

nofluorescent technique was used with confirmatory result. Figure 3.

Addendum

As this paper goes to press, I have accumulated five more cases of cytomegalic inclusion bodies associated with breast carcinoma. To date, we have seen these bodies in eight of 700 cases of breast carcinoma.

Acknowledgment

Special thanks are extended to Robert Hammerstrom, M.D., Director of Medical Education for financial support. Wayne A. Chadbourn, M.D., Clinical Pathologist and Director of the Clinical Laboratories who examined the tissue imprints and cryosections. I am indebted to Henry A. Bates, Ph.D., Director of the Research Laboratory for doing the immunofluorescent procedure and for Figure 3. I wish to thank Mr. Bernie Swenson, B.S. MT. (ASCP) for skillfully preparing tumor samples for cryostat processing.

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Treatment of the Adult with Scoliosis

ROBERT B. WINTER, M.D.*

Operative correction and fusion have become an accepted procedure, but demand a high degree of skill. Single posterior correction and fusion or combined anterior and posterior correction and fusion will now solve most adult scoliosis problems.

SCOLIOSIS, A FREQUENT condition in the North American population, has often been considered as only a pediatric disorder. There are, however, many adults who did not obtain care of their scoliosis during their growing years. These people do, of course, still have their spinal deformity and may or may not be having difficulties with it as an adult.

Advances in treatment techniques, both operative and non-operative, have become possible for the adult and can provide the symptomatic adult with management that was not previously available.

The major non-operative advancements have been in the design and fabrication of braces to support the spine, whereas the major surgical advances have been the development of both anterior and posterior fusion and instrumentation techniques which, coupled with safer anesthetics and general medical management, have provided the opportunity for surgical correction and stabilization of the adult with scoliosis.

Review of the Literature

It was not until recently that various authors have written concerning the natural history of untreated scoliosis. In two classic articles, Nachemson⁵ and Nilsson and Lundgren⁶ published the results of evaluation of patients who had been untreated for 35 to 40 years. For a significant thoracic scoliosis, these authors found there to be a high mortality rate from cor pulmonale with death tending to occur at approximately age 45. There were also high rates of disability and back pain with loss of income producing potential, disability pensions, lowered marriage rates, and emotional dissatisfaction with body image.

Another long term study from Iowa published by Collis and Ponsetti¹ focused attention upon progression or non-progression of the deformity in adult life. These authors found that thoracic curvatures of 60° or more had a very high likelihood of progressing another 25 to 30 degrees, reaching curvatures with magnitude of 90° at the time of followup. Curvatures

of this magnitude were always associated with diminished respiratory capacity. In this series, back pain was not felt to be a significant disability in the followup group, but other authors^{3,4} have found the opposite to be the case.

Thus, there is very good evidence that very many adults have progressive deformities even after the end of the growth, and that if significant degrees of deformity are obtained, the patients may have considerable difficulty with respiratory function, cor pulmonale, back pain, and loss of self image.

Several authors^{3,7,8} have addressed the problem of surgical correction and stabilization of the adult scoliotic, both idiopathic and due to other etiologies. In general, these authors have all presented similar results showing that the adult scoliotic can be treated; that there is a smaller percentage of correction as compared to children, and, most importantly, a higher complication rate in the surgical treatment of the adult as compared to the child. Infection rates were higher, pseudarthrosis rates were higher, mortality rates were higher, morbidity rates from neurologic impairment were higher, and adults were emotionally less able to handle the rigors of surgery.

More recent experience has shown that careful attention to many details of management plus the avoidance of prolonged bedrest or traction have considerably reduced the complication rate for the adult.

Treatment

Non-Operative Treatment

In the author's experience, pain is the most frequent presenting complaint of the adult with scoliosis. This may be a thoracic curve, but is more often a thoracolumbar or lumbar scoliosis. These patients usually do not have respiratory malfunction, but have pain which is typically in the curve area, but may also arise from portions of the spine outside the curvature. Seldom are there radicular symptoms or findings.

Early in the symptomatic phase of the deformity, the pain tends to be on the convexity of the curve and is muscular in origin, not being present at the start of the day and becoming more significant with activities

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during the course of the day. This is relieved by rest, heat, and analgesics and aggravated by prolonged upright activity. With the passing of years, the pain tends to concentrate in the bone area itself and may switch to the concavity of the curve as the concave facet joints become afflicted with degenerative arthritis. On occasion, this degenerative facet joint disease may cause enlargement of the facet joint with spur formation which may in turn cause foraminal encroachment and radicular symptomatology.

Attempts to treat painful curves by physical therapy modalities in which motion of the spine is encouraged, has been universally fraught with failure. The osteoarthritic facet joints are aggravated by mobilization exercises and pain is increased by these exercises rather than diminished. It makes as much sense to exercise an arthritic spine as it does to subject the patient with osteoarthritis of the knee to exercise therapy.

Contrarily the patient will receive more benefit by immobilization of the spine so that the arthritic joints are not irritated. The best method to accomplish immobilization is by external support through corsets or braces. Patients with mild deformities with minimal external malformation can obtain relief by the use of commercial corsets with plastic or metal stays. Patients with more significant deformity cannot be placed in items "off the shelf" due to their anatomical malformation and therefore have to have custom-molded plastic supportive braces. These require the expertise of orthotic facilities especially trained in molding braces for the deformed spine.

If only one or two facet joints are particularly symptomatic, they can be injected with local anesthetic and steroids and significant relief can often be obtained. Such injections should be done under image intensifier control to more safely and precisely place the medication in and around the joint.

Surgical Treatment

Patients with progressive and highly symptomatic pain, non-responsive to conservative treatment, should be considered for surgical treatment. Patients presenting with progressing curvatures, especially those associated with increasing respiratory deficit, should also be strongly considered for surgery. If there is increasing deformity even without pain, then surgery is usually the treatment of choice. Surgery consists of spine fusion, usually of the entire curve or curvatures and not just localized fusion of one or two painful levels.

Scoliosis surgery in adults was fraught with a large number of difficulties until the development of Har-

rington and Luque instruments, stainless steel rods which internally stabilize and correct the spine deformity allowing correction to be obtained and maintained while the patient is ambulatory with a cast or brace. These rods come in many sizes, lengths, and designs and are utilized according to various types and lengths of deformity. Virtually never is complete correction of the deformity obtained, but in the adult the essence of treatment is more towards stabilization than towards correction. If the progressive deformity can be halted this is a good result. If a progressive down-hill deterioration of pulmonary function can be halted, this is good. If pain can be relieved, this is good. If the respiratory function can be improved, this is better. Thus, the primary goal is stabilization of the spine with secondary goals being correction of the deformity, relief of pain, improvement of respiratory capacity, and finally, improvement of self image by improvement of the bodily contours.

The typical patient with a moderate thoracic curvature will require a day or two of careful medical evaluation in the hospital prior to surgery, followed after surgery by five to seven days of bedrest after which time a brace is applied and then the patient is discharged three or four days later. This, therefore, involves an average hospitalization of approximately ten days for a single stage posterior spine fusion with Harrington or Luque instrumentation. The brace will remain on for a period of from four to six months, depending upon the patient's individual healing capacities, age, and curve pattern.

More complex deformities require more extensive treatment, quite often involving two-stage surgery. The first stage is most often an anterior operation wherein the disc spaces over several vertebrae are removed and bone chips inserted in the disc spaces. This anterior mobilization and fusion procedure is then followed two weeks later by posterior instrumentation and spine fusion. One week after the second operation the brace is applied, and approximately one week later the patient is discharged from the hospital ambulatory in the brace. Approximately six months of post-operative immobilization in the brace is necessary, but on brace removal no further treatment is necessary.

Complications of surgical treatment include wound infection, pseudarthrosis, pneumonia, atelectasis, psychiatric disturbance, displacement of hooks or rods, and very rarely, paralysis or death.

The infection rate has been reduced to less than one percent during the past five years through the use of prophylactic antibiotic regimes during, and for the first 48 hours after, surgery. This, of course, is coup-

led with stringent surgical technique in the operating room. By avoiding prolonged bedrest and/or traction, pneumonia and atelectasis have been reduced to very low levels. Atelectasis is more common after anterior transthoracic spine exposure. Psychologic disturbances have been minimized by, once again, the reduction of prolonged bedrest or traction, the use of extended visiting hours to maintain personal contact with the family and friends, and the rapid restoration to the home environment. Pressure sores have been markedly reduced by the use of the instruments in surgery to obtain correction rather than depending upon the external pressure from casts to create correction of the curvature as was done in the past. Postoperative casts have been almost completely eliminated, most patients using braces (removable for showering) and some needing no external support.

Death is, of course, a very feared complication, and may occur from most any of the reasons that cause death in the adult undergoing any type of surgery. Most of our small number of deaths have been related to the attempts to treat extremely ill individuals in a desperate attempt to salvage their lives.

Paralysis or nerve injury is a complication considerably feared by both patient and surgeon. Cord injuries due to excessive stretching have been markedly reduced and virtually eliminated by the avoidance of strong skeletal traction prior to surgery and by the use of the Stagnara "wake-up" test in the operating room where patients are awakened to the point of being able to move the toes on voluntary command immediately after insertion of the rods. This complication has now been reduced to less than one per-

cent of adult scoliosis surgeries.

Case Reports

Case 1

This 59-year-old female had a 42° lumbar scoliosis which had become quite painful. Exercises had only increased her pain. Brace immobilization gave dramatic comfort. The brace was worn for all upright activities for six months, then gradually removed. She wears the brace now only occasionally with no return of her severe low back pain (Figures 1 (A), (B), and (C)).

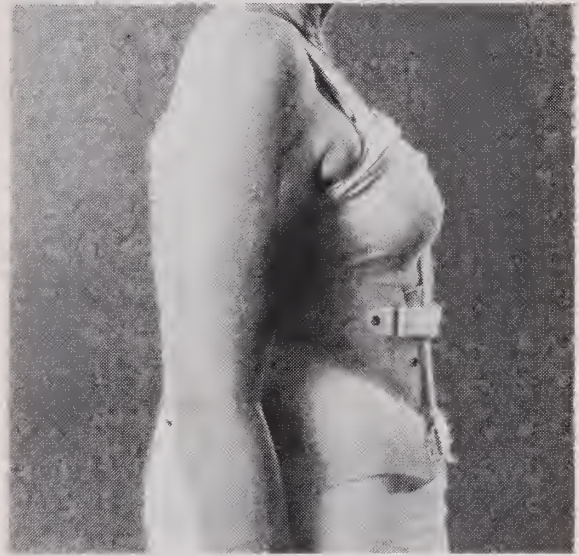


Figure 1 (B)



Figure 1 (A)

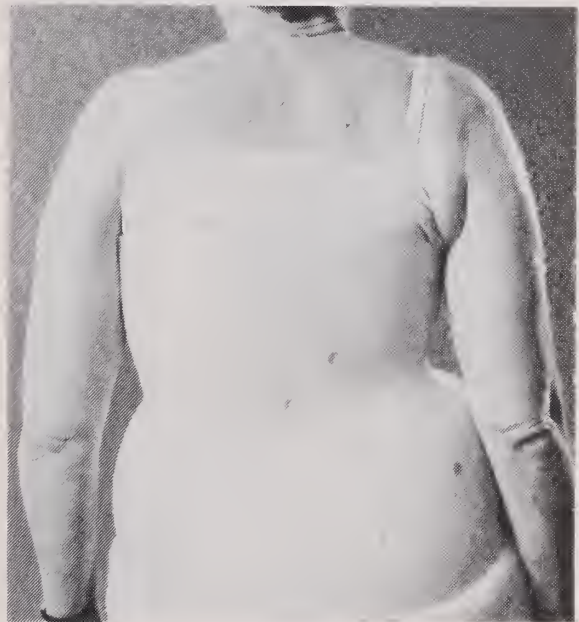


Figure 1 (C)

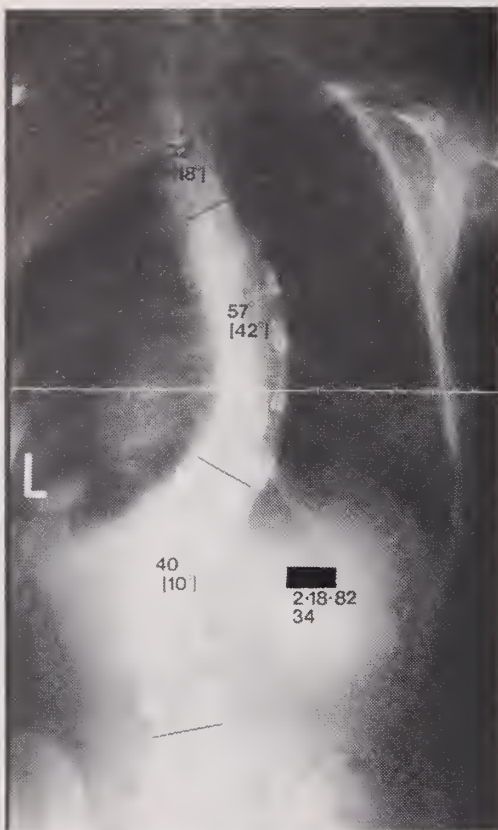


Figure 2 (A)

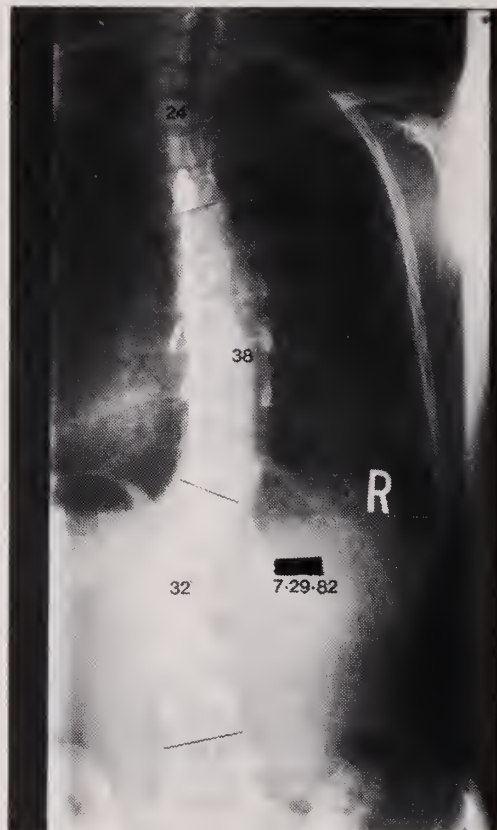


Figure 2 (B)

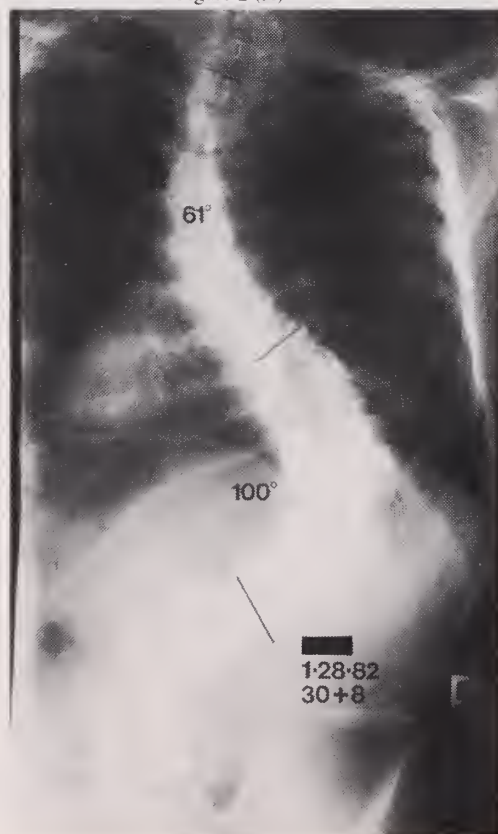


Figure 3 (A)



Figure 3 (B)

Case 2

This 34-year-old married white female presented in February of 1982 with a 57° right thoracic curve due to idiopathic scoliosis, correctable on side bending to 42° (Figure 2 (A)). On February 19, 1982, she underwent a single stage posterior correction and fusion from the fifth thoracic vertebra to the twelfth thoracic vertebra with a Harrington distraction rod and segmental sublaminar wiring. Her 57° curve was corrected to 38° (Figure 2 (B)). Her postoperative course was uneventful and on the fifth postoperative day an underarm brace was applied, and on the seventh postoperative day she was discharged home. She remained in this brace for six months. She was found to be free of difficulties. Her fusion was solid and no further treatment was necessary. This patient was a school teacher and remained active in her profession while in her brace.

Case 3

This 30-year-old single female from Puerto Rico had noted an increasing deformity, a gradual loss of height, back pain, and marked loss of self-image. She had a 100° right thoracolumbar scoliosis and a 61° left thoracic scoliosis (Figure 3 (A)). Treatment consisted of anterior disc excision and fusion of the T10-L3 area followed one week later by posterior instrumentation and fusion from T2 to L4. She wore a brace postoperatively for six months. Her 100° curve corrected to 46° and the thoracic curve from 61° to 38° (Figure 3 (B)). The surgery was performed in January of 1982. She gained four inches in height, lost the "hump" on her back, has much improved endurance, and a vastly improved self-image.

Discussion

All too often, the adult with scoliosis has been told that "there is nothing the medical profession can do to help you". This is not the case, however, and most often good modern medical treatment is available to the adult with spine deformity problems regardless of the etiology. In a recent extensive review of the

experience of the Twin Cities Scoliosis Center published by Swank, et al.,⁸ the statistical analysis of a large group of patients has been made available. She showed that the patient in the 20s and 30s can be treated very similar to the adolescent with scoliosis with similar results expected and with minimal complication rate. After age 40, the complication rate rises gradually and thus emphasizing a need for treatment in the earlier years. Although the oldest patient personally operated by the author with instrumentation and fusion was 79 years of age and did successfully survive the surgery, we seldom operate on patients in their sixties or seventies. As the bone becomes more osteoporotic, surgical techniques become less and less appropriate and the medical complications of the advancing years also make such procedures less desirable.

Needless to say, more adequate treatment of children in the present day will drastically reduce the number of adults having these problems in the future.

The surgical techniques now available are complex and demand a high degree of skill by a surgeon, anesthesiologist and nurses as well as other allied personnel. Such procedures are not recommended for the occasional surgeon.

Conclusions

Surgical and non-surgical treatment of the adult scoliosis patient has now improved to the point where most adults with painful or progressive spinal deformities can be treated. An attitude of hopelessness is no longer appropriate. Physical therapy modalities emphasizing motion and muscle strengthening have not been found appropriate for the painful adult, whereas immobilization has proven to be more effective for non-operative treatment.

Operative correction and fusion has become an accepted procedure, but demands a high degree of skill. Single posterior correction and fusion or combined anterior and posterior correction and fusion will now solve most adult scoliosis problems.

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Doctors — The Duped Drug Suppliers

Part II

SERGEANT CHUCK HUNZIKER*

In the July '82 issue,[†] I related a few of the problems physicians have encountered in dealing with the drug abuser/seller as a patient.

Shockingly, according to the DEA estimates of 1980, fraudulent prescriptions accounted for almost 1% of the 15 billion units of controlled substances manufactured in this nation that year — some 135 million units!

Millions of other units are acquired illegally through the burglary and robbery of pharmacies and hospitals. Oddly enough, physicians have an ancillary involvement in this illegal diversion.

A recent case involving pharmacy burglaries in Minnesota, Iowa, and Wisconsin, serves as an excellent example. A woman went to several physicians until she obtained a prescription for Dilaudid. She then went to a pharmacy to have it filled, and watched the pharmacist as he took the large bottle of Dilaudid off the shelf, and remembered the location. A few days later her husband and associates would burglarize the pharmacy, knowing exactly where the Dilaudid was being stored. This, of course, decreased their chance of being apprehended by spending unnecessary time searching for the drug.

I imagine as you read this last article, you are asking, "How am I to know the intentions of a patient?" Hopefully, as I share some of my modest experience and research, it may assist you in gaining a different perspective in administering to the drug abusing patient.

Analgesics are the most popular choice of today's abuser, followed by the anorectics and depressant type drugs. When examining a patient who complains of pain, especially lower back and headaches, look for the tell-tale signs of hydrosis, thirst, watery eyes, and pinpoint pupils. Narcotic addicts take the drugs parenterally, so look for needle marks on the inner arm, forearm, shoulders, and the back of the hands. A real clue would be a patient wearing a long-sleeved shirt on a hot summer day.

The fake symptoms and ailments the drug abuser brings to the office or hospital are concomitant with

the degree of sophistication the abuser has acquired.

As previously cited, migraine or cluster headaches and lower back pain are common ailments used to obtain narcotic drugs such as Demerol, Dilaudid, Percodan, and Talwin.

The clever abuser complains of kidney stones, always having pain on the left side so the examining physician rules out appendicitis. When the physician asks for a urine sample, the abuser will surreptitiously prick his finger and put a few drops of blood in the urine sample. The abuser will then give you a myriad of reasons why he cannot be hospitalized: Always passes the stones at home; doesn't have hospitalization insurance; insurance won't take effect for a month.

The drug of choice for many physicians in administering to terminally ill patients is Dilaudid. (Now having a street value of \$50-\$90 per 4 mg tablet!) Well, now the abuser becomes terminally ill! His medical records are always coming from California, New York, or wherever. The records will be coming in a week or so and always delayed.

Many of the abuser/sellers are extremely intelligent, as a current case I am investigating exemplifies. The abuser suffers from Munchausen's Syndrome and possesses a Master's degree in Chemistry. He/she manufactures his/her own cultures in the lab and then injects him/herself. This patient is obviously quite well-versed in medical terminology, diagnosis, and treatment.

For those patients you have that are abusers, rest assured they usually need extra medication because they are leaving town for an extended period, or premature refills because their pills were stolen, lost, or destroyed (fell in the toilet).

The abuser may bring his friends in as new patients, which may frighten away your regular patients. He may threaten you if you refuse to write any further prescriptions, and as a last act of gratitude for conning you out of drugs, he may sue you for making him into an addict, as in a case now in Hennepin District Court.

*St. Paul Police Department, Narcotics Unit.

†Page 425.

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References:

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BRIEF SUMMARY

PROCARDIA* (nifedipine) CAPSULES

For Oral Use

INDICATIONS AND USAGE: 1. **Vasospastic Angina:** PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation; 2) angina or coronary artery spasm provoked by ergonovine; or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and/or adequate doses of beta blockers.

2. **Chronic Stable Angina (Classical Effort-Associated Angina):** PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS: Known hypersensitivity reaction to PROCARDIA.

WARNINGS: **Excessive Hypotension:** Although in most patients the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone with low doses of fentanyl in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PROCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation. It is important to taper beta blockers if possible rather than stopping them abruptly before beginning PROCARDIA.

Congestive Heart Failure: Rarely, patients usually receiving a beta blocker have developed heart failure after beginning PROCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS: **General:** **Hypotension:** Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. In patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug Interactions: Beta-adrenergic blocking agents: (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates: PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the anti-anginal effectiveness of this combination.

Digitalis: Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility: When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy: Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients; transient hypotension in about 5%; palpitation in about 2%; and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant anti-anginal medication. Additionally the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely introduction of PROCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PROCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PROCARDIA therapy, has been reported twice in the extensive world literature.

HOW SUPPLIED: Each orange, soft gelatin PROCARDIA CAPSULE contains 10 mg of nifedipine. PROCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66), 300 (NDC 0069-2600-72) and unit dose (10x10) (NDC 0069-2600-41). The capsules should be protected from light and moisture and stored at controlled room temperature 59° to 77°F (15° to 25°C) in the manufacturer's original container.

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Side effects are usually mild (most frequently reported are dizziness or lightheadedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%).



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- 1) Confirmed vasospastic angina
- 2) Angina where the clinical presentation suggests a possible vasospastic component.
- 3) Chronic stable angina without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or nitrates or who cannot tolerate these agents. In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks' duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in these patients are incomplete

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Please see PROCARDIA brief summary on adjoining page

Competition

CHESTER A. ANDERSON, M.D.*

COMPETITION IS THE NAME of the game. Not since FDR and the New Deal have we seen such a barrage of alphabetical organizations, all organized to meet the expanding demand for lower health care costs. PPOs, HMOs, PHPs, IPAs, SHARE, AWARE, and I am sure there are many more on the drawing board. Are they being organized because each thinks they can provide better medical care at a more cost efficient rate, because they have to be organized to get their share of the medical care dollar, or because third party payors (both government and private industry) have contracted to provide more care for their people than what they can afford, and are therefore putting the pressure on medical care providers to cut their charges substantially so the same contracted services can be provided at less cost. My personal opinion is that all three factors have brought on the revolution that we now find ourselves in.

Again, there are some basic tenets that we all have to realize.

1. Quality anything is going to cost more than a bargain basement product.
2. If costs are cut drastically, the type and amount of service just has to be cut.
3. A workable contract has to be agreed upon by all parties concerned — not just the person or organization writing the contract.
4. The practice of medicine and the method of delivery of medical care is going to change drastically in the next 3-4 years.
5. The M.D. who has, in the past, done a conscientious job of serving his patients and feels that this is all he needs to do to maintain his practice, now is no longer dealing with reality.
6. The loyalty that patients had to their "doctor" is fast fading in the cost-price squeeze.
7. Doctors, whether they like it or not, not only are being forced to provide medical service, but are also being forced into the hard-nosed field of business competition, and they will sink or swim depending on how well they adapt to that, what is for them a completely foreign operating forum, field of endeavor.
8. "Marketing" — something that was only applied to products is now also being applied to

services.

We find ourselves in the open marketplace, competing for patients — all too often against each other, and the government payors and private third party payors are looking on with glee and anticipation. So, how do we stay afloat? By learning the rules of the game and applying them to the advantage of our patients and ourselves. I have no doubt there is enough brain power and ability within the medical profession to be better at this than our opposition, and if we apply ourselves to the task at hand with all the diligence, intuitiveness, persistence and drive that has made us doctors of medicine in the first place, we will indeed succeed.

Four basic factors in any marketing endeavor: (1) Have a good product (2) Offer it at a good price (3) Be in the right place with your product (4) Promote that product to the best of your ability. The 4th Ps of good marketing. As long as all of these organizations meet these major factors and work at them, they will succeed.

Let's apply the above to our present situation in medicine: (1) Quality medicine — Let's insist on it by all organizations. (2) Good price — Quality deserves a fair price in the marketplace and let's insist on it! A fair price is not an exorbitant price, and some prices may have to come down, some may have to go up. Other manufacturers of products know their cost of production and what a fair profit is, and they set their charges accordingly. We, not third party payors, should set our prices, but they should be fair and marketable. (3) There may have to be some changes of location of some physicians in order to better compete in the marketplace. (4) We have to promote ourselves as individuals, as organized groups, as a medical organization. The new marketing division of the MMA is rapidly getting into this business to aid us in that endeavor.

With that background, we are possibly going to meet our first great challenge in the forthcoming pilot project of the DPW involving capitation funding for Medicaid recipients in four Minnesota counties. Any group can get into the challenge if they can meet the rules and regulations set up by DPW:

The MMA has also set up a policy for the Medicaid proposal offered by DPW:

*Hector, Minnesota

1. Assure access, but not guarantee unlimited options.
2. Use private sector cost-containment strategies, emphasizing a pluralistic delivery system.
3. Use a physician as a gatekeeper and pay the physician adequately on a fee-for-service basis.
4. Change nursing home and hospital payments from a cost based system to a price based system.
5. Use community-based services for elderly care when those services do not exceed the costs of institutionalized care.

With the above factors being considered, physician members of the Minnesota Academy of Family Physicians are contemplating forming an IPA to compete in the marketplace with the above named organizations. Family Physicians, with the largest specialty

organization in the state, feel they can contribute their expertise and know-how into this whole field of pre-payment medicine. As planned, their organization will meet the five requirements of MMA policy and also, hopefully, meet the rules and regulations as proposed by DPW for the Medicaid Demonstration Project. This will be an organization wholly owned and operated by primary care physicians.

In my opinion, only physicians can practice medicine, and any organization that intends to provide medical care on a competitive basis should be run by physicians. Quality care must be preserved and the patient's welfare is our first obligation. Quality care for our patients at a reasonable cost is the bottom line. Competition, based on that basic premise, should be accepted by all.

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Acquired Immunodeficiency Syndrome

Epidemiologic Update

JOEL N. KURITSKY, M.D.* and MICHAEL T. OSTERHOLM, Ph.D., M.P.H.*

As of September 2, 1983, 2259 cases of acquired immunodeficiency syndrome (AIDS) have been reported to the Centers for Disease Control (CDC). This report reviews the epidemiology of AIDS.

ACQUIRED IMMUNODEFICIENCY syndrome (AIDS) was first recognized in June 1981. The syndrome, described as a disease moderately predictive of a defect in cell-mediated immunity occurring in an individual with no underlying reason for such a defect, has been diagnosed in 2259 individuals as of September 2, 1983. Four groups appear to be at increased risk for developing AIDS: homosexual or bisexual men with multiple sexual partners; intravenous drug users; Haitian refugees; and hemophiliacs. The purpose of this paper is to review the currently available data on the epidemiology of AIDS, the case-control study involving male homosexuals, the reported information on the other high risk groups identified and clinical laboratory findings in AIDS patients.

Case Report Update

The agent(s), both infectious and non-infectious responsible for the clinically recognized syndrome has been previously reviewed.^{1,2} Two of these clinical manifestations, Kaposi's sarcoma (KS) and *Pneumocystis carinii* pneumonia (PCP), have occurred in 85 per cent of the cases (Table 1). The distribution of cases by risk group reveals that homosexual or bisexual men comprise 71.4 per cent (1612 cases), intravenous drug users 17 per cent (384 cases), Haitians residing in the United States five per

cent (114 cases), and hemophiliacs less than one per cent (16 cases).³ The proportion of cases by risk group has not changed over time for the first 1000 cases analyzed.¹ Approximately six per cent of the cases can not be classified into the recognized risk group categories. Of these cases, risk factor data is either absent or incomplete in three per cent. One per cent of the cases are heterosexual partners of AIDS cases or of individuals at risk for development of AIDS, and those exposed to blood transfusions. One per cent of the cases in which there is sufficient epidemiologic information do not belong to a recognized group.⁴ One hundred forty-seven are female (Table 2). Of the 147 cases, 51 per cent occurred among drug users and 10.9 per cent among Haitians. Risk group category for the remaining cases is unknown (Table 2). Over 67 percent (1530) of the cases are from New York City, San Francisco, Miami, Newark and Los Angeles (Table 3). The estimated number of cases per million population in New York City is 103. Ninety per cent of the recognized cases have occurred in individuals who are 20 to 49 years of age.³ Distribution of cases by race or ethnicity shows that 1291 cases (57 per cent) are white, not Hispanic, 594 cases (26 per cent) are black, not Hispanic, and 323 cases (14 per cent) are Hispanic.³ Analysis of the risk group category by ethnicity for the first 1000 cases revealed that 71.9 per cent (727) of the cases in homosexual or bisexual men were white, not His-

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TABLE 1
Distribution of Case-Fatality Rates by Disease for Cases
Reported to the CDC as of September 2, 1983.³

Primary Disease	Cases	Percent of Total	Deaths	Case-Fatality Rate
KS* without PCP#	586	25.9	124	21.2
PCP without KS	1156	51.6	532	45.6
Both KS and PCP	164	7.3	95	57.9
"OI without KS or PCP	344	15.2	166	48.3
Total	2259	100.0	917	40.6

*KS = Kaposi's sarcoma

#PCP = *Pneumocystis carinii* pneumonia

"OI = other opportunistic infections

panic, and 47.7 per cent of the cases in intravenous drug users were black, not Hispanic.¹ Of the 727 cases in homosexual or bisexual men, 81 were also intravenous drug users and of the 54 cases reported in Haitians, three were reported to be homosexual or bisexual and one was an intravenous drug user. Among the eight cases reported in hemophiliacs, one was also a homosexual or bisexual man.¹

As of September 2, 1983, seven cases have been documented in people residing in Minnesota. These cases belong to one of the recognized risk groups.

The case-fatality rate for diagnosed AIDS patients is approximately 41 per cent (Table 1). However, this underestimates the true case-fatality rate, since among cases diagnosed between January 1980 and December 1981, the rate is currently 79 per cent (218 of 275) (Table 4). The case-fatality is highest in those patients who have both KS and PCP (Table 1).

Homosexual or Bisexual Men

Disease distribution by sexual orientation demonstrates that homosexual or bisexual men are more likely to develop KS than heterosexual men, although the majority of cases in the former group are first diagnosed with PCP.⁶ Only about 10 per cent of the cases in this risk group have another opportunistic infection.^{1,6}

To determine risk factors associated with AIDS in

this group, two case-control studies have been reported. A national case-control study conducted by the Centers for Disease Control (CDC) of 50 homosexual men with AIDS (38 with KS, eight with PCP, and three with both) and 120 age, race, and residence matched controls revealed several statistically significant risk factors.⁷ First, cases were more likely than controls to have reported a history of syphilis and more likely to have reported a history of non-B hepatitis. Second, cases had a greater number of sexual partners per year than controls; and compared to controls, a higher proportion of these partners met in bath houses. Third, cases were more likely to have participated in the practice of "fisting" (insertion of a hand into a partner's rectum) and "rimming" (insertion of the tongue into the partner's rectum) than controls. Logistic regression analysis revealed that the variable most strongly associated with AIDS was the number of male sexual partners and the fact that they met in bath houses.

Another case-control study performed by investigators from New York University and Columbia University, conducted with 20 homosexual men with KS and 40 controls, also revealed several significant factors.⁸ Cases were significantly more likely than controls to have had a history of mononucleosis, to have used amyl nitrate, and to have had more sexual partners per month in the year preceding disease. In

TABLE 2
Distribution of Cases by Mutually Exclusive Risk Group Category for
Cases Reported to the CDC as of September 2, 1983.*³

	<u>Males</u>		<u>Females</u>		<u>Total</u>	
	<u>Cases</u>	<u>Percent of Males</u>	<u>Cases</u>	<u>Percent of Females</u>	<u>Cases</u>	<u>Percent of Total</u>
Homosexual or Bisexual	1612	76.3	0	0.0	1612	71.4
Intravenous (IV) Drug User	309	14.6	75	51.0	384	17.0
Haitian	98	4.6	16	10.9	114	5.1
Hemophiliac	16	0.8	0	0.0	16	0.7
None Apparent/Unknown	77	3.7	56	38.1	133	5.9
<u>Total</u>	<u>2112</u>	<u>100.0</u>	<u>147</u>	<u>100.0</u>	<u>2259</u>	<u>100.0</u>

*Patient risk groups categories listed are ordered hierarchically; cases with multiple patient risk group associations are tabulated only in the group listed first.

TABLE 3
AIDS Cases Per Million Population,* by Standard Metropolitan Statistical Area (SMSA) of
Residence, Reported from June 1, 1981 to September 2, 1983 United States.³

<u>SMSA of Residence</u>	<u>Cases</u>	<u>Percentage Of Total</u>	<u>Cases Per Million Population</u>
New York, NY	940	41.6	103
San Francisco, CA	268	11.9	82
Miami, FL	104	4.6	64
Newark, NJ	64	2.9	33
Los Angeles	154	6.8	21
Elsewhere (irrespective of SMSA)	729	32.2	4
<u>Total United States</u>	<u>2259</u>	<u>100.0</u>	<u>10</u>

*From the 1980 Census.

contrast to the CDC study, cases were not significantly more likely than controls to have had a history of hepatitis or to have had a history of syphilis. Again, in contrast to the CDC study, cases were more likely to have used amyl nitrate and a variety of "street" drugs. However, this study showed that cases had more sexual partners per month in the year preceding disease than controls.

Intravenous Drug Users

Distribution of cases in intravenous drug users shows that almost 80 per cent of the first 155 cases analyzed were reported to reside in New Jersey or New York at the onset of their symptoms.¹ Approximately four per cent of these cases reside in California. In contrast, 28 per cent of the AIDS cases who belong to the risk group of homosexual or bisexual men, reside in California.

A summary of a published report of seven cases of AIDS, who were heterosexual and used parenteral drugs, suggested several points of interest.⁹ First, of these patients, four used heroin and cocaine, two used heroin, and one used cocaine. Second, five of the patients had PCP, one had disseminated histoplasmosis, and one had disseminated cryptococcus. Third, of these seven patients, all were non-white.

Haitians Residing in the United States

Two reports have described 30 cases of AIDS in Haitians in the United States.^{10,11} Sufficient epidemiologic information to rule out risk factors such as homosexuality or intravenous drug use was available in 21 patients. These patients had been in this country a median of two years (range three months to eight years). Disseminated or miliary tuberculosis was found in six of the cases. *Pneumocystis carinii* was found in seven cases and *Toxoplasmosis gondii* of the central nervous system was found in five cases. In one of the studies, it was documented that oppor-

tunistic infection developed weeks to months after the initiation of therapy for mycobacterial tuberculosis in six of 10 patients. Patients in both studies presented to health professionals with fever, weight loss, and gastrointestinal symptoms for at least two months prior to development of disease.

Patients with Hemophilia

A summary of published reports regarding seven cases of AIDS in hemophiliacs shows that only one case is from a state (New York) where there have been an increased number of AIDS cases.¹² The age range of the seven cases is 10 to 62 years (mean = 45 years).¹³ Six of these patients have had PCP, two also had *Mycobacterium avium* infections, one had pulmonary cryptococcus concurrently, and one had histoplasmosis diagnosed by bone marrow biopsy. In addition to these seven published reports, the CDC has described a seven-year-old hemophilia patient with immunologic parameters consistent with AIDS, but without a definite disease diagnosis. All of these patients were recipients of factor VIII concentrate.

Other Potential High Risk Categories: Children of High Risk Parents; Sexual Contacts of Persons with AIDS; and Blood Transfusion Recipients

As of September 2, 1983, the CDC recognized 11 cases of AIDS in persons under the age of 20.^{3,14} One report described four infants with unexplained cellular immunodeficiency and opportunistic infections. These four developed symptoms two weeks to five months after birth. Presenting symptoms in these infants were oral or vaginal candidiasis in two, persistent diarrhea in one, and fever and respiratory distress in one. Three of the children developed PCP and one developed *Mycobacterium avium intracellulare* infection between five and 17 months of age. All of these infants had decreased number of T-cells or impaired T-cell function. Of particular epidemiologic

TABLE 4
Reported cases of AIDS and Case-Fatality Rates by Half-Year
of Diagnosis, 1979 to September 2, 1983, United States.

	Number of Cases	Number of Deaths	Case-Fatality Rate
1979 Jan-June	1	1	100%
July-Dec	7	6	86%
1980 Jan-June	18	14	78%
July-Dec	26	25	96%
1981 Jan-June	73	62	85%
July-Dec	158	117	74%
1982 Jan-June	318	191	60%
July-Dec	565	234	41%
1983 Jan-June	901	235	26%
1983 July-Sep	185	28	15%
Totals*	2259	917	41%

*Table totals include 5 cases diagnosed prior to 1979, and 2 cases for which date of diagnosis is unknown. Four of these 7 cases are known to have died.

interest was the health status of two of the mothers. One mother was in good health at the time of her child's birth, but 10 months later developed fever and oral candidiasis and one month later developed PCP. A second mother, a resident of San Francisco, was described as a prostitute and intravenous drug abuser with a history of oral candidiasis.¹⁴ As of December 1982, there were at least 12 other infants under investigation who did not have an opportunistic infection, but had immunodeficiencies similar to the cases described.¹⁴ A more detailed review of other children has been published.¹⁵

In May 1983, investigators reported a case of AIDS in a person who was not a member of a high risk group and who was a female sexual partner of an AIDS case.¹⁶ This particular case, a 37-year-old female, developed PCP in July 1982. She had been a sexual partner of a male who had been diagnosed as having PCP in June 1982. She had been a sexual partner of that male since 1976. She denied parenteral drug use, or any other risk factors. In the same study, the authors described five female patients with no known risk factors who were sexual partners of men with AIDS, one who had lymphopenia and generalized lymphadenopathy, two who had lymphopenia without lymphadenopathy, and two with lymphadenopathy without lymphopenia.

Two reports have suggested multiple blood transfusions as the vehicle for transmission of an AIDS agent. The first case is from San Francisco and occurred in a 20-month-old infant.¹⁷ That infant, who had *Erythroblastosis fetalis*, received whole blood, packed red cells and platelets from 19 donors during the first month of life. At age four months, the patient developed hepatosplenomegaly. At age 14 months, the patient was found to have *Mycobacterium avium intracellulare* in a bone marrow sample after he developed neutropenia and hemolytic anemia. Investigation of the donors demonstrated that one donor, a 48-year-old white male, who was healthy at the time of donation, subsequently developed AIDS.

The second case occurred in a 53-year-old male.¹⁸ The patient underwent triple-vessel coronary artery bypass surgery and received six units of whole blood, one unit of packed erythrocytes, five units of platelets, and four units of fresh frozen plasma. Approximately two years after surgery, the patient began complaining of malaise and fever. Five months later he was diagnosed as having PCP. The patient denied risk group association. Donors for this latter case are still under investigation.

Clinical Laboratory Findings

Immunologic studies of AIDS patients have found

several consistent findings, including lymphopenia, reduced total T-cells, reversal of the normal helper to suppressor T-cell ratio, and reduced T-cell response to both mitogens and antigens. In addition, patients tend to have cutaneous anergy.²⁰ Evaluation of immunoglobulin demonstrates increased IgG and IgA.²¹ Patients also can have increased cytomegalovirus titers.

Discussion

The chronology and description of AIDS suggest that the disease is new, has remained confined to specific risk groups, and is transmitted either through repeated sexual or blood-borne contact. The distribution of disease by risk group category, suggests that there may be a possible genetic predisposition to the development of KS in homosexual or bisexual men, or perhaps the route of entry of an AIDS agent(s) may affect the clinical manifestations of the syndrome.^{22,1} Data collected from a cluster of cases in homosexual residents in southern California suggested that the incubation period might be from nine to 22 months.²²

It has also been suggested that the mode of transmission of this agent might be similar to that of hepatitis, type B virus.²³ Because of this hypothesis, the U.S. Public Health Service has published guidelines to limit the transmission of a possible AIDS agent(s).^{24,25} Indeed, the infectiousness of this agent may be considerably less than that of hepatitis, type B virus for two reasons. First, in the two years since the epidemic had been recognized, no health care worker (who is not a member of high risk group) has developed AIDS as a result of caring for patients with AIDS. While four AIDS cases have been documented among health care workers, these workers, however, had no known contact with AIDS patients or secretions from AIDS patients.²⁶ Second, in this period of time, six million individuals (R. Bowman, personal communication) have received blood transfusions, and only one per cent of clinical AIDS cases appears to be related to transfusions.⁴

One study suggests that generalized lymphadenopathy and non-specific symptoms such as fatigue, muscle pain, night sweats, and others may be a prodrome to AIDS.²⁷ In addition, a New York study showed that a significant proportion of homosexual men who were asymptomatic (or had non-specific symptoms or signs) had altered immune functions demonstrated in vitro.²⁸ Similar findings have been reported among patients with hemophilia.²⁹ Although the significance is not clear, the occurrence in at least two groups at high risk for AIDS suggests that the pool of persons potentially capable of transmitting an

AIDS agent may be considerably larger than the presently known number of clinical AIDS cases.

In the search for an etiologic agent, some interest has focused on human T-cell leukemia virus (HTLV). Patients with AIDS in one study were more likely to have antibodies expressed on the cell-surface of HTLV-infected lymphocytes than were a variety of controls.³⁰

The current AIDS epidemic presents a challenge to public health officials, researchers and clinicians. It is incumbent on all public health officials to communicate effectively with the media and the public. It

is necessary to communicate that AIDS does not appear to be transmitted by casual contact. It is important to communicate to blood donors that they can not contract AIDS by giving blood. Also, the recipients of blood and blood products need to be reassured that the risk of contracting AIDS is exceedingly small. The ability of our blood banking community to serve the public is vital and should not be impaired because of false perceptions about this disease.

Acknowledgement

The authors would like to express their appreciation to Lynne Pierson for her reviewing of the manuscript and to Juanita Heiser for her clerical support.

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Cover Photograph

"Powder and Wilderness Skiing"

Fereydoon S. Mahjouri, M.D., practicing plastic surgeon in Minneapolis, snapped the cover photograph while powder and wilderness skiing (Helicopter skiing) in the Bobbie Burns area, British Columbia, Canada. This is an area 48 kilometers west of Parsons in the Purcell Mountains.

The occasion of the photograph was one of his yearly trips of Heli-Skiing in the Canadian Rockies. A Rollie camera 35 mm, F16 lens, 125 was used.

Dr. Mahjouri was a former member of the Iranian ski team. He graduated from Tehran University Medical School, Tehran, Iran, in 1967 and did postgraduate work at Cook County Hospital in Chicago in 1969.



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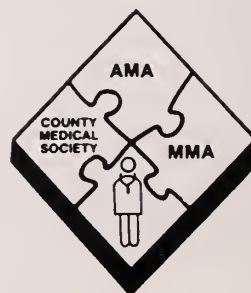
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Rheumatology Corner

Temporal Arteritis

SCOTT T. PERSELLIN, M.D.* and WILLIAM W. GINSBURG, M.D.*

TEMPORAL ARTERITIS is an inflammatory arteritis which involves primarily cranial branches of arteries originating from the arch of the aorta although there may be more widespread involvement. Other names for this disorder include giant cell, cranial, and granulomatous arteritis. Nearly all affected patients are Caucasians over the age of 50-years old and women outnumber men 2:1. Temporal arteritis appears to have an annual incidence rate of approximately 11.7 cases per 100,000 population aged 50 years and older, and has been reported in 1.6 percent of random autopsy cases.

The etiology and pathogenesis of temporal arteritis is unknown. Various factors appear to play a role in pathogenesis including the aging process, sex, heredity, race, cell-mediated and humoral immunity, as well as circulating immune complexes and a vascular endothelial cytotoxic factor.

Temporal arteritis is a disease with protean manifestations. The onset of symptoms may be acute or insidious. In one large series less than half of 100 patients presented with initial manifestations which were directly related to localized artery involvement and included headache, visual loss, jaw or peripheral claudication, and scalp tenderness. The remainder presented with the associated syndrome of polymyalgia rheumatica or the more nonspecific constitutional symptoms of fever, fatigue, malaise, anorexia and weight loss. When presenting in this manner the diagnosis is not always apparent and may lead to delay in treatment. Eventually 83 of the 100 patients developed symptoms and 66 developed signs related to arterial involvement including artery tenderness, diminished pulsations, nodularity, bruits or ophthalmologic abnormalities.

Complete, irreversible visual loss is the most serious complication of temporal arteritis though the incidence of blindness is less than 20 percent. Transient visual symptoms of amaurosis fugax, diplopia, or blurring usually precedes more permanent abnormalities. Blindness is most commonly the result of ophthalmic or posterior ciliary arteritis and less commonly retinal arteritis. Ophthalmoscopy may reveal

changes of ischemic optic neuritis or retinal artery occlusion.

There are no diagnostic laboratory studies in temporal arteritis. Laboratory studies are indicative of the inflammatory nature of the disease. The erythrocyte sedimentation rate (ESR) is almost always elevated, often over 100 mm per hour Westergren, and correlates well with overall disease activity. There may be an anemia of chronic disease, normal or mildly elevated leukocyte count and thrombocytosis. Other nonspecific indicators of inflammation may include an increase in the alpha-2 globulin, hypoalbuminemia, and elevated liver alkaline phosphatase and glutamic-oxaloacetic transaminase — all of which usually normalize with adequate treatment of temporal arteritis. Urinalysis, antinuclear antibody and rheumatoid factor are almost always negative.

All patients suspected of having temporal arteritis should have a temporal artery biopsy to confirm the diagnosis. The risks of long-term corticosteroid treatment are potentially devastating in this elderly population and a definite diagnosis can only be obtained by biopsy. The diagnosis should be considered in any Caucasian patient over 50-years-old with a high ESR and visual symptoms, fever of unknown origin, polymyalgia rheumatica, headaches, or other symptoms of arteritic involvement. Because the arteritis may be focal or multifocal within a single artery with intervening normal "skip areas", a 4-6 cm section of temporal artery should be obtained and sectioned at 5 mm intervals. If normal, contralateral temporal artery biopsy should be considered. Arteriography may be used to examine the aortic arch and the arteries of the extremities if indicated by the presence of bruits, claudication or pulse deficits.

Histopathology of the involved artery is characterized by interruption of the internal elastic lamina and infiltration of the arterial wall with primarily mononuclear inflammatory cells (i.e. lymphocytes, macrophages, and plasma cells), progressing to arterial wall necrosis and granulomatous inflammation. Giant cells are often present but are not necessary to make the diagnosis of temporal arteritis.

Corticosteroids in a dose equivalent to prednisone 60 mg daily should be commenced when the diag-

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nosis of temporal arteritis is made. The symptoms of temporal arteritis may begin to respond within 48 hours though the pathologic changes resolve more slowly. The initial effective dose should be continued for one month and then slowly tapered at a weekly rate not exceeding 10 percent of the daily dose. This should be decreased depending on the patient's symptoms and ESR. It appears that adequate doses of corticosteroids are anti-inflammatory and prevent the

vascular complications of temporal arteritis but do not appear to attenuate the natural time-course of the disease. The course is variable but most patients require corticosteroids chronically in a dose averaging 10 mg daily prednisone for greater than two years. The use of calcium carbonate and Vitamin D may be helpful to prevent corticosteroid-induced osteoporosis.

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Echoes from Our Past

Life and Death in the Blood

JACK D. KEY, M.A., M.S.*

Sir Arthur Conan Doyle (1859-1930), famous for his Sherlock Holmes stories, was a physician. One of his medical articles, "Life and Death in the Blood," was published in *Good Words* (1883). The introduction is a forerunner of his later science fiction stories and, most amazingly, of a 1966 movie, *Fantastic Voyage*. He asked the reader to imagine . . . a man [with] the power of reducing himself to the size of less than the one-thousandth part of an inch, and should he, while of this microscopic structure, convey himself through the coats of a living artery, how strange the sight that would meet his eye!

Once there he would see the red blood cells that carry oxygen and the white blood cells (leukocytes) that envelop and ingest material. Doyle cautioned that there would be "small hope for our poor little mite of humanity should one of these floating stomachs succeed in seizing him in its embrace." This article also presented surprisingly detailed descriptions of the functions of red and white blood cells. Metchnikoff (1845-1916) in 1884 originated the theory of phagocytosis. He described phagocytes in leukocytes and showed their function as scavengers.

Origins

The great *Oxford English Dictionary* begins with the first English use of the word "A," in its meaning as a letter of the alphabet. It appeared circa 1340, in a poem titled "The Pricke of Conscience" by Richard Rolle of Hampole. The text of this presents the belief that you can determine a newborn's sex by the sound of its first cry:

If it be man it says a! a!,
That the first letter is of the name
of our forme-fader Adam.
And if the child a woman be,
When it is born it says e! e!
E. is the first letter and the head
Of the name of Eve . . .

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Geriatric Medicine

Quality in Long Term Care Challenge of Self-Evaluation

JAMES J. PATTEE, M.D.* and JUDITH MARSHIK GUSTAFSON†

The changing expectations and influence of consumers of long-term care are powerful forces affecting change in long-term care delivery. Consumers and providers of health care are negotiating needs and responsibilities in health care and definitions of health, quality of life, and cost/benefit ratios in long-term care. A consensus is necessary to provide appropriate goals for the system.

Quality assurance is a tool providers can use for feedback, learning and planning change. A quality assurance program needs to address the entire continuum of services in the delivery of health care services after defining health and establishing goals acceptable to consumers and providers.

DURING THE PAST 15 YEARS there has been a marked increase in the number of long-term care beds and services provided to the elderly. The number of long-term care beds in the United States now exceeds the number of acute hospital beds.¹ The cost of providing long-term institutional care also has increased because of increasingly sophisticated services as well as demand for better quality of care.

This increase has been due to two factors. The percent of our citizens over 65 years of age is growing. Between 1960 and 1980, this population doubled. There also is a marked increase in the over-75 group, who are the primary users of institutional care. In addition, the increase in government support for long-term institutional care of the elderly via the Medicare and Medicaid programs has provided financial incentives to both providers and consumers of this kind of care.

The federal government, because it pays 65-70% of the costs of long-term care, has made several efforts to assure the appropriateness of care via regulatory mechanisms for quality control. As the federal, state, and local funding sources look at ways of cutting expenditures in long-term care, and as the emphasis on federal regulation diminishes, quality assurance will receive less and less funding. The expense of these elaborate methods of assuring quality has not been justified. However, the absence of federal controls will strengthen the need for ingenuity from the

long-term care field. Providers will need to examine themselves periodically and answer questions concerning the appropriateness, efficiency and quality of their services. Self-evaluation is essential both for the wise use of resources by facility management and to assure the consumer that cost containment efforts are not reducing the quality of care.

Voluntary efforts are already underway in many long-term care facilities. Stimulated by regulatory intervention, these quality assurance methods are now retained by the facility because they serve a vital purpose. Utilization Review Committees are one manifestation of these efforts. Mandates in the standards for participation in Medicare and Medicaid and required by Professional Standards Review Organizations (PSROs), these committees now serve as a focal point for physician involvement in long-term care. The Joint Commission on Accreditation of Hospitals (JCAH) has always participated in quality assurance efforts for long-term care. Recently JCAH developed a standard devoted to quality assurance activities in health care settings including long-term care. This standard required health care facilities to have ongoing methods of evaluating their own health care services.

We will address some of the emerging health and social trends which impact on quality assurance. Specific recommendations for change will be made so as to set direction for facilities who are facing this new challenge of self-evaluation.

Long-Term Care: the Site of Social Change

The many limitations in current quality assurance

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practices in long-term care were not always so obvious. The growing awareness of these shortcomings in quality control systems is a result of changing consumer expectations for the long-term health care delivery system. The increasing influence of consumers and the broadening of the scope of the needs they ask providers to address are major factors causing sweeping changes in long-term care.

These two factors are powerful forces which will cause, in turn, other changes in health care delivery as we know it today. These changes can be identified in five areas:

- the shift in responsibility and accountability for health from providers to consumers of health care
- an emerging definition of health which is shared by both providers and consumers of long-term care and which identifies wellness concepts rather than illness concepts as its core
- change in the focus of health care delivery from an emphasis on service sites to an emphasis on clusters of client needs
- a broadening of long-term health care services to emphasis on quality of life rather than quality of medical care
- reintroduction of cost/benefit models of health care evaluation which evaluate the impact of a program on a community's health indices as well as individual client satisfaction with health services.

Shifting Accountability

Placing an increased responsibility for their own health on individuals themselves is an appropriate response to the requests by consumers for more choice. Incorporating the values of a client into the long-term care delivery system will help this system to generate more appropriate responses to client needs. Clients' values influence their decisions about lifestyle and their response to care. For instance, a patient with chronic obstructive lung disease may prefer to turn off his oxygen, wheel himself into the hall and smoke a cigarette. Obviously, his desire to maintain his freedom of choice and enjoy a cigarette is more important than living added years. The suggestion that a patient modify his/her lifestyle may receive the following response: "I won't live any longer; it will just seem that way."

Increasingly, it will be the individual's decision about his/her health, which includes diet, exercise, habits of sleeping and drinking, that influences the need for long-term health care. What is an appropriate response of this care delivery system to individuals who are making decisions that have a negative

impact on their health? This is the real dilemma. For the individual to retain the right to choose, he/she must accept the responsibilities for these decisions. How can the long-term care delivery system provide the incentives, both positive and negative, to assure that the exercise of these rights are accompanied by accountabilities as well?

With the current situation in which responsibility for health care is exclusively the provider's, the need for education — not only for the provider, but particularly for the long-term care recipient — is evident. A change in this responsibility should place even greater emphasis on the recipient's need for information. Ultimately, the benefits of a system of informed choice will be manifest in the health and quality of life of each individual. Obviously, the bottom line of any health care system is the benefit to the individual. Education for change takes considerable effort and time. This educational process will not be built on a knowledge-base as much as on an experience-base, so it will take even longer. The recipient will retain more freedom, and the provider will lose the role of caretaker but gain one as an active collaborator in the promotion of health.

New Definition of Health

Dialoguing on the quality care in a long-term care setting demands that the recipient of the health care and the provider of the health care conceptualize health in the same terms. Most of the providers of long-term health care have had their training in acute care settings. The development of health care is rooted in the hospital system and medical centers of the United States. Much of current medical research is directed at identifying the causes of disease. The emphasis in the acute care system is on illness care. Many long-term care needs, however, are not illness-focused and result from a lifetime of health choices.

Physicians commonly conceptualize health as the absence of disease. The World Health Organization has defined health as a state of complete physical, mental, and social well-being. Verwoerd² has defined a healthy person as one able to cope with any of life's stresses. The concept that health is the absence of disease has ignored both the psychosocial aspects of health as well as the fact that health is a relative concept which changes during a person's life cycle.

Because of the prominence of the hospital model in the health care system, concepts of health and quality of health care are dominated by these highly skilled providers of health care. The long-term care system has inherited these definitions and concepts. An effort

is needed to redefine what we mean by the quality of health care. The acute care model is criticized because of its lack of concern for the individual and its organ/disease orientation.

This is not a new phenomenon. Socrates criticized a Greek physician for foolishly neglecting the whole while attempting to heal a part. Few physicians or patients will deny that the removal of a diseased gall-bladder or an appendix, the successful treatment of a urinary tract or respiratory infection with appropriate antibiotics, or the setting of a Colles' fracture is not of great benefit to the patient. However, because these actions are so dramatic and rewarding to both the patient and the physician, the care of chronic disease and the psychological and social difficulties that affect the quality of health care are ignored or seldom identified. The average physician sees little value in monitoring and assessing chronic disease that changes very little over time. She/he doesn't understand the importance of a supportive role to the nursing home staff. She/he doesn't appreciate the role of educating the staff to provide a type of care that medical expertise can foster while meeting psychological and social needs of clients.

Long-term care patients have multiple diseases, usually chronic in nature, that defy cure. Elderly patients with multiple diseases are in delicate equilibrium with their environment and must be viewed as a whole. The pinning of a fractured hip is appropriate for the patient's comfort as well as for being able to provide personal care. On the other hand, the removal of an arteriosclerotic limb from the patient who has generalized arteriosclerosis with functional impairment of the brain and heart may be inappropriate. The immobilization of an elderly patient in a coronary care unit may result in confusion, muscular weakness, and joint stiffness so that rehabilitation of the patient to a former functional status may be impossible. Allowing the patient to remain home in a familiar environment or in a nursing home which encourages him to remain active may, indeed, be a more appropriate response of the health care system. A common definition of health could do much to remove the barriers to understanding between the clients and providers of long-term care. Certainly, the formulation of a common language is a critical first step to enhancing understanding and formulating common goals.

Shifting Emphasis from Clusters of Services to Clusters of Needs

Attempts to modify the current health care system often start with the "givens" and work to make

change within these limitations. One set of "givens" is the service sites. Hospitals, nursing homes and clinics have become the skeleton of the health care system, and attempts at changing it always acknowledge the unique character and service configuration of each of these settings. This is health care defined from the provider perspective, i.e., the site in which she/he does a daily job.

Health care, defined from a consumer perspective, consists of the services needed to provide relief from a set of problems, irrespective of site. One health problem, such as impaired mobility, may lead to a hospital for surgery, a clinic for tests, a nursing home for rehabilitation, a gym for exercise, and a self-help group for empathy and support. The client does not see the service site as a focal point for care, nor does the physician stand as the central purveyor of that care.

Gaps in the delivery system have caused long-term care clients to organize to meet their own needs, in some cases, and to lobby for new services from the system in other cases. Patients and their families have formed associations for their mutual benefit. These new organizations pride themselves on being able to share pertinent knowledge and experience and give mutual psychological and social support. Organizations have been formed which include patients and families who are affected by mental retardation, myocardial infarction, cancer, Alzheimer's Disease, Huntington's Disease, Multiple Sclerosis, and other inherited neurological disorders. As a rule, the development of these self-care and self-help groups is stimulated by the needs of patients and families that were not being met by the health care system. The strength of these organizations depends solely on their response to a perceived need.

The hospice movement is careful to not identify itself with a health care delivery site. The hospice concept of support, both with knowledge and expertise in psychological support for the patient and family, can take place in any environment. The hospice concept assumes health is much more than the absence of disease and, indeed, stresses a quality of life even in the presence of severe illness. Hospices have been located in long-term care facilities, hospitals or independent community settings.

The growth in chemical dependency programs which are located in the community and often outside of the usual medical care system is a direct response to consumer need that was poorly met and addressed in hospitals and nursing homes.

The difficulties the health care system has in addressing the needs of the alcoholics and his/her family are well documented in the literature. First, physi-

cians and nurses fail to take an adequate drug history. Secondly, when alcoholism or chemical dependency is identified, neither the nurse nor physician document this fact. Thirdly, the physician and nurse do not identify themselves as part of the health care system to provide care for the chemically dependent.

Undoubtedly, certain clusters of client needs are best addressed in hospitals. Others are best met in nursing homes. Still others are better met in community-based settings. The growing list of consumer needs will challenge the long-term care delivery system to focus its energies on those areas on which it can have the most impact. This may well mean some significant changes in the role and clientele of nursing homes.

Quality of Life

Changing expectations of the adult population have moved the definition of health from one of quality medical care to another which is broader, including medical/health care as only one of its facets. The concept of quality of life relates the quality of health care to the physical, mental and social well-being of a person. John Flanagan, Ph.D., was able to identify fifteen areas that contribute to the quality of life by interviewing some 3,000 individuals, who supplied him with over 6,000 critical incidences which had significantly enriched their lives.³

He identified 15 factors which act to enrich the lives of both middle-aged and elderly persons. If the health care system is to address the total needs of the residents in long-term care, it must review each one of these factors and ask how each is being addressed. Further, since these factors are the critical determinants which create a quality of life for patients in hospitals, clients in physicians' practices, residents in nursing homes, or homebound individuals, the assurance of the quality of health care needs to address them.

The nursing home which accepts the caretaking role and which provides a restricted and typical institutional setting that doesn't address or encourage residents to actively participate in intellectual, social or recreational activities will certainly affect the quality of the residents' lives. Health care delivery systems need to look at the value systems of all the participants. How does the provider of health care or recipient of health care treat the handicapped individual with a chronic disease? If individuals have expressed these needs and identified factors which promote them, does the health care system have the right to ignore them? What is the role of the more competent and non-handicapped individual? A health

care delivery system which accepts the premise that handicapped or elderly individuals have no value will, of course, have a different approach than a system which states that all human life has a value and that quality of life can be maximized in spite of disabling handicaps

Cost/Benefit for Systems and Individuals

Much has already been written about the emphasis of health care delivery on efficiency of operations to the exclusion of reviewing the system's effectiveness. There are many reasons for this, ranging from the funding agency's interest in service costs to the lack of evaluation tools with which to measure impact of health care. Scarcity of resources will create even a stronger push for the long-term care delivery system to prove its worth and demonstrate its contributions. Even now, leaders in the business community are discussing the failures and foibles of long-term care delivery⁴ and calling for a national response to the increased cost issues. Although difficult to quantify and measure, health care outputs will need to be made explicit and measurable, or the public credibility of the delivery system will be jeopardized.

Cost/benefit, as an evaluation model which looks at the use and cost of resources in comparison to the benefits derived from them, will continue to grow in importance. Measuring benefits to communities and to individual consumers of the long-term care delivery system is bound to be a challenge to the evaluator. Communities will tend to emphasize long-range gains in health while individuals, living in the here and now, will tend to use their satisfaction with service as the best estimate of the quality of the delivery system. Both long-range changes in the total community's health and improvement in an individual client's appraisal of the delivery system are important indices with which to measure system change.

Long-Term Care Quality Assurance — Moving into the Future

A change in one part of a total system has a ripple effect on other parts. As the growing influence of consumer changes the roles and focus of long-term care delivery, and as the delivery system expands to include new values and perspectives, quality assurance will change too. A comparison of the shortcomings of current quality assurance methods/systems with future health care trends yields a list of five needed improvements.

- Identifying the Unique Contributions of Long-Term Care
- Developing a Goal Orientation to Long-Term Care Delivery

Providing Mutually Agreeable Definitions for Health Care

Probability of Quality Rather than Certainty
Quality Assurance as a Tool for Feedback,
Learning and Planned Change

Identifying the Unique Contributions of Long-Term Care

Just as the health care system needs a holistic approach to the patient, it also needs a holistic approach to the delivery of health care services. Quality assurance in long-term care, as well as in hospital or in home care, should have a broad enough base to identify and compare physician offices, hospitals and nursing homes as care delivery sites. Utilizing the findings produced by these quality assurance programs will help clarify the unique role of the nursing home and its mission in the continuum of the health care system.

Developing a Goal Orientation to Long-Term Care Delivery

The quality assurance system, whether in the physician's office, the hospital, the long-term care facility or the home, must address the shared responsibility of the provider and the client for the quality of care. There must be means of negotiating the perceived differences between the provider and the client.

Negotiation of mutual goals helps to clarify the expectations of both providers and clients and also acts to prioritize the use of increasingly scarce health resources. If clients have responsibility for setting their own health care goals and selecting the methods by which they choose to achieve them, they will take a big step forward to increased accountability for their choices. Progress or failure in the attainment of these long-term health care goals will be the way in which quality of long-term health care will be measured. This means that there will be a growing emphasis on measuring the impact and outcomes of long-term health care, regardless of the site or source of the care.

Providing Mutually Agreeable Definitions for Health Care

"Health" as a concept in a rapidly changing society has little meaning anymore. It is quite safe to say that it means something different to each client and provider. In order to muster resources and enhance the careful use of them to achieve ever broadening health goals, a common goal must be defined.

Probability of Quality Rather than Certainty

Redefining health in ways which broaden the

meaning of the word to include many quality of life factors also serves to make any one given factor less important to health in a predictive and direct way. For example, with the old definition of health as the "absence of disease," it was clear where the health system needed to direct its energies — to the eradication of disease. Using this definition, one could absolutely predict the healthiness of a given individual.

With new and more complex definitions of health, there is no longer a straight line relationship between any single factor and health. Many factors are seen as contributing to health, and each healthy individual may have varying degrees of satisfaction on each of these separate factors. In fact, to further complicate the matter, each client may have individual priorities which serve to further underscore or downplay the importance of separate factors in contributing to that client's health.

Multiple factors with multiple priorities and multiple degrees of fulfillment move quality assurance from a science of guaranteeing health care quality to an art of predicting the probability of quality. Probability of quality predictions will require more complex measurements of multiple factors and the use of multivariate statistics to handle these data. Further intervention into quality problems will never be able to absolutely predict quality improvement; at best, actions taken to remediate problems can only hope to improve the probability of successful health care.

Quality Assurance as a Tool for Feedback, Learning and Planned Change

It is often stated that the most effective evaluation is self-evaluation. Carl Adams, M.D.,⁵ often makes an analogy comparing quality assurance in long-term care to his appearing in public. He states he would much prefer to assess his own dress and grooming in a mirror than rely upon the opinion of someone else. To him, quality assurance is self-evaluation. This definition takes quality assurance out of the hands of experts and places it in the guardianship of providers. It means that the very skilled individual will have new and different roles to play in the facility. One role is that of a catalyst in developing the long-term care delivery system to meet the needs of the client; a second role is that of assessing the system so that it is doing what it is supposed to do; and a third role is using this assessment or quality assurance information to bring about change, either within the system itself or in those forces which monitor and direct the system for appropriateness and quality.

Summary

Long-term care providers stand on the brink of sweeping changes in long-term care delivery and in quality assurance for that care. Five recommendations for change have been made. These changes have already begun, both in this country and abroad. Providers in long-term care can expect to become a more critical part of the total health delivery system and

may well lead the way to assuring quality in wellness care. Consumerism in long-term care will change the responsibility and roles of both clients and providers to assure the quality of care. Regulation of quality in long-term care which is coercive and punishing will be replaced by voluntary quality assurance initiated by long-term care facilities which desire to learn, to improve and to change.

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Pediatric Advanced Life Support

A program of first-hour care of critically ill or injured children, January 26 and 27, 1984, The Inn, St. Paul.

Offered by Children's Hospital of St. Paul, the fee is \$150 for physicians. Participants eligible for 16 hours of AMA Category I credit.

For information or to register: contact Leslie Fishman, MD, Director of Emergency Services, Children's Hospital, 345 North Smith Avenue, St. Paul, MN 55102, (612) 298-8236.

Board of Medical Examiners

An error was made in the notice for renewal of licensure to practice medicine in Minnesota sent out by the Minnesota Board of Medical Examiners. Those who have birthdates in May, June, July and August, and were licensed in years *other than* 1978, 1979 and 1980 were sent incorrect instructions and renewal cards in regards to the reporting of Continuing Medical Education. Those physicians in this group licensed before 1978 were instructed that they were not required to report CME's, however they will be required to report in order to renew their license for 1984. The correct renewal card may be obtained upon request from the Board's office at (612) 623-5534 (717 Delaware Street SE, Suite 352, Minneapolis, MN 55414). Those in this group, licensed after 1980 were instructed that they had to report their CME in order to renew for 1984, they do not. These doctors may renew with the materials they received, the CME portion of the card may be ignored. Those individual physicians or medical clinics wishing clarification of their status may do so by contacting the Board's office at the above address. The Board sincerely apologizes for this error on our part and on the part of the state computer system.

Letters to the Editor

Dear Mr. President:

I have recently attended the MMA leaders conference on 9/23/83 and wish to thank you and your colleagues for an excellent presentation and impressive conference.

I know it takes many man hours and work to put one of these on, with most of your time spent on this project being somewhat of a thankless proposition. In my capacity as Chief of Medical Staff at North Memorial Hospital of Minneapolis I've naturally come in contact with a fair degree of the subject matter but your choice of speakers was excellent and I was also very impressed that there were some actual suggestions of possible answers or at least approaches to the problems that should be undertaken now, not in the next few years' time. I will try to take back to my constituency that you and the board are showing strong leadership and innovation in trying to get us aware and somewhat organized before the tidal wave engulfs us. Hopefully most of our peers will wake up and get politically active before it is too late.

Once again thank you for a fine conference and stimulating day.

Bruce A. Norback, M.D.*
Minneapolis, Minnesota

*Chief of Staff, North Memorial Hospital, Minneapolis

Dear Editor:

I continue to enjoy receiving MINNESOTA MEDICINE in my trans-atlantic position, and have thoroughly enjoyed your continuing efforts to improve our writing style together with the correspondence this has engendered. However, from this side of the Atlantic I have observed with concern what is apparently becoming a rule in American writing style, namely to split the infinitive. Probably the most obvious example of this is the classical opening line of Startrek where the Intrepid Travellers each week "endeavor to boldly travel the Universe" splitting their infinitives! However I was horrified that Mark Holoweiko, in your July issue, should actually split an infinitive in one of his condensed rules of readability.* Perhaps he should add Rule 15:-

"15. Only split infinitives for emphasis."

This was the style of Winston Churchill, but I rather fear that the split infinitive has become a rule in its own right in American writing. If so, this is rather sad.

Professor R. H. Anderson,
B.Sc., M.D., M.R.C. Path.
Associate Editor
International Journal of Cardiology

*Page 420.

Dear Editor:

I was visiting my father, Dr. George Cutts, in Minneapolis when your most recent journal and directory arrived. I thought that you might be interested in knowing that my father is probably the oldest living member of the Minnesota Medical Association. He was 101 on July 20th. He was graduated from the University of Minnesota Medical School in 1907. He retired from full time practice at the age of 70. He is in good health with his only serious problems being with hearing and vision. He lives by himself in an apartment at the Menorah Plaza in St. Louis Park. His brother, Abe, who will be 98 in December also has his own apartment and is remarkably active. My father is less active but takes complete care of himself. He maintains an interest in medicine and until several years ago attended meetings at Mt. Sinai Hospital

Richard A. Cutts
Elgin, Illinois

Diagnosis Related Groups

How Will They Affect You?†

STEVEN D. CARTER*

I AM PLEASED to be with you here today in Minnesota. Your Association's staff has worked hard to put together a quality educational program for you on DRGs. You might ask why did they pick the Executive Director of the Kansas Medical Society as the keynote speaker. What unique qualifications do I have to talk to you about DRGs today?

The Twin Cities in particular and Minnesota in general have long been known as a hotbed of competition and innovation in the health care system. Most national conferences on trends in the health care system feature a speaker from your area. In Kansas, we're now developing our own "claim to fame". Over a period of six months Kansas will undergo a *large scale restructuring of the health care payment system*.

In July of this year our welfare agency in Kansas began to reimburse hospitals for Medicare services on a prospective per diem rate, and to reimburse physicians for their services at a reduced rate. In October of 1983, Kansas, along with most of the rest of the nation, will begin to experience the Medicare Prospective Payment System based on Diagnosis Related Groups. In January of 1984, Blue Cross/Blue Shield of Kansas will also begin to pay hospitals prospectively on a DRG rate system, and also to pay physicians by maximum allowable payment schedule.

It is not particularly surprising for these changes to take place, nor will it be surprising to see other states experience the same changes in the future. What is unique today is that Kansas will experience changes in *all reimbursement systems* during the same six month period.

I bring you greetings from my Board and the physicians of Kansas. As you can imagine, given the scale of the change anticipated in our state, we have expended significant Association resources in exploring the potential impact on physicians of an all payor DRG system. Our travel bills for trips to Washington are astronomical. We are anxious to share the information that we received with you and with other physicians in the hopes that we all will be more prepared to face the challenges of the future.

†Adapted by Carol J. Kaemmerer, MMA Director of Research from keynote address by Steven D. Carter at the 1983 MMA Leaders' Conference, Friday, September 23, 1983, Radisson South Hotel, Bloomington, Minnesota

*Executive Director of the Kansas Medical Society in Topeka, Kansas

Overview of the DRG Legislation

On October 1, 1983 Medicare's hospital Prospective Payment System (PPS) based on Diagnosis Related Groups (DRGs) began its phased-in program. Hospitals will receive Medicare payment on this basis concurrent with the beginning of their first fiscal year on or after October 1, 1983. Under the Prospective Payment System, hospitals will receive a fixed payment or rate for each of 467 diagnostic categories or diagnosis related groups (DRGs). If a hospital incurs lower costs for providing services to a patient than the DRG category allows, the hospital keeps the difference. On the other hand, if it costs the hospital more to provide services to a patient than the hospital receives under the DRG rate, the hospital experiences a loss.

The Diagnosis Related Group system sorts patients by discharge diagnosis into 467 categories that are medically similar and have an approximately equivalent length of stay. Variables used to assign the patient to a DRG include principal diagnosis, age and qualifying complications such as specific secondary diagnoses, operating room procedures, etc. The DRG payment by Medicare is considered to be payment in full, enabling a hospital to keep all cost savings, or likewise, all losses it incurs. The DRG system itself does not take into account the severity of a particular patient's condition.

The legislation specifies that the new payment program will be phased-in over a three year period, beginning with a percentage of reimbursement based on current limits prescribed by the TEFRA (Tax Equity and Fiscal Responsibility Act) law and a percentage on a regional DRG basis. Over the transition period this will evolve to a combination of actual costs and regional/national DRG rates, and finally in FY 1987, payment for hospital inpatient services will be based entirely on national DRG rates.

Unlike most commercial insurers who make allowances for costs for uncompensated care from bad debt and medical indigency, the DRG rate will compensate only for those bad debts which result from Medicare patients who are unable to meet their deductible copayment responsibilities. Outpatient services, medical education, and capital expenditures are

not included in the DRG rate, and will be billed at actual cost.

There are some facilities that will be exempted (at least at present . . .) from the DRG based system. These include HMOs and outpatient clinics; long term care facilities; psychiatric, children's and rehabilitation hospitals. There are special adjustments for hospitals designated as sole community providers, cancer research facilities, and regional or national referral hospitals. The requirements for designation as facility which qualifies as exempted or eligible for special adjustments are very stringent. Payments to these facilities will not be made on a strict DRG basis because of extraordinary expenses, the difficulty of establishing DRG rates specific to the type of care, or because the facility is already incorporated in a competitive medical plan. HCFA already has plans underway, however, to make it possible to bring exempted facilities and providers under prospective payment in the future.

The system also makes provisions for cases which involve a patient with an extremely long or costly length of stay as compared to most cases within the same DRG. The federal government intends to classify 5 to 6% of all cases as atypical or "outlier" cases. For outliers, the hospital will receive the full DRG rate payment, plus an additional payment for added days provided. This compares to approximately 30% of all cases in New Jersey which were classified as outliers. So, you see, the Feds do not intend to be generous here. . . . Their goal is to ensure that they will not spend any more on Medicare in the future than they have in the past — so called "budget neutrality".

In addition to these exemptions and exceptions, the DRG method of payment will not be the only prospective payment system permitted under the new legislation. The states of New Jersey, New York, Massachusetts and Maryland have received waivers which allow them to have a prospective payment plan other than a DRG-based plan. Other states can also apply for a waiver. However, since Medicare intends not to pay more for the alternative system than they would have under the DRG system, the rules under which a waiver may be applied are very stringent.

Peer Review Organizations

Peer Review Organizations (PROs) will replace Professional Standards Review Organizations (PSROs) with the responsibility to monitor providers and deny payment for unnecessary services and inpatient days. A provision of the law requires every hospital participating in Medicare to contract with a

PRO for utilization and quality review by October 1, 1984.

Incentives for providers will obviously be different under the DRG-based Medicare plan than the present retrospective or cost-based plan. Under the current plan, because Medicare pays for all services received by a patient, providers have financial incentives to request more services than necessary and to extend lengths of stay.

Under the Medicare DRG plan, providers have no incentive for providing unnecessary services or extending inpatient days because the DRG rate remains the same. Conversely, the incentives may encourage unnecessary hospital admissions, readmissions for multiple procedures and discharges earlier than medically advisable.

Another problem may be "DRG creep", that is, a deliberate and systematic shift in a hospital's reported case mix in order to improve reimbursement. Hospitals may also seek to admit only the "cream of the ill" (that is, people who are not really very sick . . .), sending the very ill to another hospital. Strict local review of Medicare cases could prevent these problems.

In an attempt to eliminate unnecessary services and contain costs, there is the potential for providers to underserve patients and for the quality of patient care to suffer. It is for this reason that the peer review function is essential under the new Prospective Payment System.

The DRG legislation mandates PROs to give special attention to six areas:

Admissions

To reduce the possibility of unnecessary admissions, the PRO will monitor changes in admission statistics for each hospital and investigate increases. The PROs will also be required to review all admissions for those hospitals found to have more than 2.5% unnecessary admissions.

Transfers to Psychiatric Units

Since psychiatric units are now exempt from the Prospective Payment System, admission to a psychiatric unit could become a loophole. PROs will review all transfers to psychiatric and rehabilitation units.

Procedure Review

Sometimes the procedure, such as surgery, will elevate a case into a higher paying DRG. PROs will review all cases involving diagnostic and therapeutic procedures "where abuse has been found in the

past". The Federal Register cites as an example pacemaker insertion.

Outliers

Ordinarily, payment is fixed by the patient's DRG. In extremely difficult cases, however, the amount of treatment or length of stay may create costs far in excess of the payment. Such cases are called outliers, and may be entitled to extra reimbursement. Peer Review Organizations will review *all* outliers.

Readmissions

There is concern that providers might exploit the Prospective Payment System by prematurely discharging patients and readmitting them, thus getting paid twice. PROs will review all patients readmitted within *seven days* of discharge.

DRG Validation

PROs will audit patient records to see if the diagnosis and procedures listed by the hospital match the clinical information contained in the chart.

Why Were Prospective Payment and DRGs Instituted?

I think the answer to the question "why is this happening to us?" lies in the desperation of the Feds to find a way to continue to provide health care benefits to a very large constituency. The costs to the federal government of health care are high, and are rising at an alarming rate. From 1979 to 1982, the average cost of a day in the hospital rose 19% per year. Hospital room and board fees climbed 14% in 1982 alone — this was three times the inflation rate for that year. Medicare spends \$39 billion for 68% of its budget on hospital services which are going up 19% per year. Medicare provides about 40% of an average hospital's income. Physician fees account for 20% of the Medicare budget. *The budget for Medicare will go broke by 1990, and by 1995, if major changes are not put in place, Medicare will build up a deficit of \$300 billion.* Clearly, something must be done.

The government has tried several other approaches to containing rising health care costs. It has limited hospital construction through the Certificate of Need and 1122 programs; it has encouraged the formation of HMOs; it has attempted to cut the government share of hospital and physician bills; it has encouraged the Voluntary Effort. The Voluntary Effort has been the most recent banner for health care cost containment. However, last year health care costs continued to rise 11.9% while the CPI rose only

3.9%. The Feds have concluded that the Voluntary Effort will not work, and that more stringent actions must be taken.

How Does the Federal PPS System Differ from the New Jersey System?

The entire nation continues to look to New Jersey for guidance on how that state fared under DRGs. However, after three years, no one really knows what the impact has been — it depends in large part on who is answering the question. It is difficult to say whether the New Jersey system produced great savings since certain costs were built into the original DRG rates. For example, New Jersey's DRG rates included costs of bad debt, charity care and generous provisions for the cost of replacement of capital facilities, and costs to allow for the phase-in of DRGs. The new federal law does not have these provisions. As I noted earlier, outlier payments were also more generous — In New Jersey approximately 30% of all cases are outliers. The Feds are allowing 5-6% outliers.

Another difference is that in New Jersey the DRG system was applied to all payors and not just Medicare. New Jersey also had a better phase-in program. In 1980, 26 acute care facilities began payment under DRGs. Gradually, the New Jersey system was expanded to include all 91 acute care hospitals in the state by 1983. Some New Jersey hospital administrators of medium sized community hospitals indicate that the effects are now becoming apparent to them, and they are worse than they originally expected.

Strategies for Hospital Survival

I thought it might be helpful to provide a brief "thumbnail sketch" of some of the possible strategies for hospital survival under the Prospective Payment System.

- Hospitals may change their emphasis to ambulatory based services, and may accelerate their diversification into clinic settings.
- Hospitals may discourage the admission of severely ill patients and admit patients who need less care.
- Hospitals will attempt to treat multiple diagnoses through multiple readmissions.
- Where possible, hospitals will try to do more "cost shifting" to private patients and will attempt to push patients in higher rate categories — so called "diagnosis creep".
- Hospitals will seek to cut the average patient length of stay and limit the number of tests and services provided.

- Physicians will be encouraged to conduct tests on an outpatient basis whenever possible.
- Administrators will add responsibilities to the medical staff.
- Hospitals will develop sophisticated computer systems to track costs and trends by diagnosis category and by provider.
- Administrators will profile each physician to compare costs incurred in treating patients and compare each physician's data to that of other physicians.
- Hospitals will set up micro-costing systems to identify all costs.
- Medical records departments will be more important than they have been in the past, with more technical personnel.
- The correctness and timely completion of medical records will be stressed.
- Hospitals will begin to make formal arrangements with home care agencies and nursing homes to provide care for convalescent patients.
- By 1990, it is possible that 90% of all hospitals will be a part of a corporate chain.
- National HMO networks will be established.
- Diversification will force better marketing and long range planning.
- Hospital chains will centralize purchasing and provide support in raising capital.
- Hospital departments will be more decentralized and stand alone for survival.
- Very little new equipment or technology will be purchased.

How Will DRGs Affect Physicians?

DRGs will probably first affect physicians in the area of use of resources. For example, there will potentially be reductions in equipment, testing and other hospital resources.

Charts that are not clear or completed in a timely fashion will cause delays in payment or denied payments. Since this will cause serious cash flow problems for the hospital, the medical staff and administration may put into place sanctions to a physician's admitting privileges if his/her charts are not updated and submitted within the time standards.

New information will be available to both the medical staff and administration on various cost profiles. Hospitals will analyze their costs to identify "loser" DRGs as well as physicians who overtest or overtreat. Physicians who regularly accrue costs in excess of the DRG payment will be asked to modify their practice patterns.

Some of the incentives in the system will be "topsy-turvy." Physicians will be encouraged not to admit patients with complex medical problems, and will be pressured to admit people who could be taken care of on an outpatient basis. Physicians will also be pressured to discharge patients with multiple diagnoses and to readmit them if they need more than one surgical procedure.

Finally, hospital cuts in service as a result of "loser" DRGs will tend to eliminate specialty physicians within the hospital.

What's Next?

It's hard to know exactly what the future holds for the payment of physician reimbursement. My crystal ball is clouded, at best. However, here are some changes that might be in the offing.

By 1985, Congress will expect legislative recommendations from a study to determine the feasibility and advisability of paying for physician services prospectively based on DRGs. You might ask "Why physicians were so lucky as to not be included on the system at the same time as hospitals?"

Well, frankly, I think that it was just too difficult to do everything all at the same time. For example, there are over 400,000 physicians compared to 7,000 hospitals, and coordinated data for the charging and utilization patterns of physicians are virtually nonexistent. Despite the difficulty of introducing a prospective payment arrangement for physician services, I think you can be assured that it *is* coming your way.

Congress will probably eliminate the scheduled cost of living increases for Medicare, require physicians to accept assignment, and replace the current system of paying for each service with a flat fee for each diagnosis. One federal approach might be the threat of a freeze in fees as an incentive for doctors to accept assignment — only those who accepted assignment would get the full cost of living increase and those who did not accept assignment would not get an increase. However, the government is worried that an all or nothing approach on accepting assignment might push too many physicians out of the Medicare program.

As another alternative, the government may simply publish directories of physicians who accept assignment. While this might seem an innocuous approach, when the Blue Cross/Blue Shield Association of Kansas published lists of participating physicians in their program, this created much controversy.

One scenario would extend DRGs both to physicians and to all payors. Several states have an all-payor system now and many more states are evalu-

ating a prospective payment arrangement for their Medicaid program.

Some politicians, notably Senator David Durenberger of Minnesota, is interested in lumping together both hospital and physician payment. While most hospital representatives would assume that the money would be funneled to the hospital, Senator Durenberger has indicated that he would also be receptive to the funneling of the combined payment to a physician's organization. You might want to gear up for this.

If the Prospective Payment System and DRGs fail to achieve their goal of reducing the increase in health care costs, politicians may pursue the concept of the voucher system for the purchase of Medicare benefits. Tax subsidies for health care services may be removed.

Finally, there may be some restructuring of beneficiary costs including programs to require the beneficiary to pay a deductible and a percentage of the first 60 days with unlimited hospital days after that period as a "catastrophic hospital coverage".

What's Happening in Kansas?

Beginning January 1, 1984 Blue Cross and Blue Shield of Kansas will implement a Diagnosis Related Group payment plan for hospitals and a maximum allowable payment plan for physicians. At present, this system is unique, but other Blues' plans are expected to soon follow suit.

Under the Competitive Allowance Program (CAP) Blue Cross/Blue Shield will establish predetermined allowances for all health care services. Hospital reimbursement will be based on fixed rate payments for all services related to a specific diagnosis (DRG). Payments to other providers of health care will be based on maximum fee allowances. Providers who agree to this type of reimbursement and sign a contract will be called contracting providers. Services of a contract

provider will represent full coverage subject to any deductible and/or coinsurance feature of a person's provider. Blue Cross/Blue Shield will publish a list of all contract providers.

Non-contracting provider's services are also covered, but payments will be sent to the patient who is then responsible for any additional charges made by the physician or other provider.

One of the most controversial portions of the program is what we refer to as a "most favored nation" clause which provides that if at any time you arrange with a group to provide services at a discounted fee, you must give that same rate to Blue Cross/Blue Shield of Kansas. This includes HMO referral physicians, Preferred Provider Organizations, and any free services such as cash discounts, introductory offers, negotiated fee schedules or fees set at less than your normal charge. Professional discounts for staff family, etc., credit card discounts, senior citizens discounts, and charity and school athletic department services are not included.

Conclusion

The purpose of providing this information to you today is not to solicit your opposition to the program described or to promote your frustration with the changing reimbursement systems, but rather to provide some advance information about the changes that will soon occur within your state. Your state medical association through its insightful committees and well informed staff will be able to provide the kind of technical assistance that will help you weather the transition period. Draw on your Association's resources!

It is my hope and the hope of Kansas physicians that you learn from our experience and mistakes and form a well structured unified strategy to adjust to expected changes and better your chances of remaining a viable force in the health care provider market.

Annual Ophthalmology Specialty Course

Neuro-Ophthalmology, Orbital Surgery, and Automated Perimetry"

April 2-3, 1984

Holiday Inn Downtown, Minneapolis, Minnesota

Faculty will include: Doctors Gary Birnbaum, Minneapolis; Thomas J. Carlow, Albuquerque, Donald J. Doughman, Minneapolis; Craig Hoyt, San Francisco; John L. Keltner, Davis, CA; John S. Kennerdell, Pittsburgh; Gregory B. Krohel, Albany, NY; James C. Trautmann, Rochester, MN; and Jonathan D. Wirtschafter, Minneapolis.

For Further Information, please contact:

The Office of Continuing Medical Education
University of Minnesota
Box 293, 420 Delaware St. S.E.
Minneapolis, MN 55455

Telephone 612/373-8012

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

January, 1984

7-11 Clinical Electrodiagnosis; Mayo Clinic/Mayo Foundation; Mayo Clinic, Rochester; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street S.W., Rochester, MN 55905; 507/284-2085.

18-20 Telmark Cancer Conference; The Duluth Clinic, Ltd. & Marshfield Clinic; Telemark Lodge; CONTACT: James G. Brueggemann, M.D., The Duluth Clinic, Ltd., 400 East 3rd Street, Duluth, MN 55805; 218/722-8364.

27-28 New Drugs; St. Louis Park Medical Center Research Foundation; Sheraton Park Place Hotel; CONTACT: Elaine Anderson, Assistant Director of Medical Education, 5000 West 39th Street, Minneapolis, MN 55416; 612/927-3703.

February, 1984

3 Surgical Care of Skin Cancer; MN Dermatological Society; Hennepin County Medical Center; CONTACT: J. D. Vance, M.D., 701 Park Avenue S., Minneapolis, MN 55415; 612/347-2332.

4-21 1984 Winter Sportsmedicine Conference; North Central Medical Conference; Sarajevo/Dubrovnik, Yugoslavia; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

8-9 Drug Therapy Symposium; University of Minnesota; Radisson, St. Paul; CONTACT: CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

8-10 Training Workshop in Pulmonary Function Testing; St. Paul-Ramsey Medical Center, St. Paul-Ramsey Medical Center; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

15-18 Recent Advances in Coronary Artery Disease; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

16-17 Current Concepts in Perinatal Medicine; St. Paul-Ramsey Medical Center & U of M Medical School; Radisson Plaza Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

24-25 ENT Problems in Primary Care; University of Minnesota Medical School; Sheraton Ritz Hotel, Minneapolis; CONTACT: Bart W. Galle, Ph.D., Interim Director, U of M CME, Box 293, Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

March, 1984

2-3 Family Practice Update; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Charles Drage, M.D., 69 West Exchange, St. Paul, MN 55102; 612/291-3180.

3-10 St. John's Hospital Winter Seminar, "Current Concepts of Medicine"; Ramsey County Chapter of the MN Academy of Family Physicians & St. John's Hospital; Vail Village Inn, Vail, Colorado; CONTACT: Mrs. R. J. Sells, 2040 E. Kenwood Drive, St. Paul, MN 55117; 612/776-2110.

6-13 Rheumatology Seminar V; Minnesota Medical Association Resource Group on Rheumatic Diseases; Paradise Grand Hotel, Nassau, Bahamas; CONTACT: Department of CME & Meeting Services, Minnesota Medical Association, Suite 400, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

8-10 Current Concepts in Cardiopulmonary Medicine; St. Paul-Ramsey Medical Center & U of M Medical School; Radisson Plaza Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

9-10 Colon and Rectal Diseases; U of M Medical School; Hyatt Regency Hotel; CONTACT: CME, University of Minnesota, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN; 612/373-8012.

10 Occupational and Environmental Pulmonary Diseases; St. Paul-Ramsey Medical Center & Midwest Center for Occupational Health & Safety & University of Minnesota Medical School; Radisson Plaza, St. Paul; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

12-14 MN Academy of Family Physicians, Spring Refresher; MN Academy of Family Physicians; AMFAC, Minneapolis; CONTACT: Chari Konerza, Executive Director, MN Academy of Family Physicians, Health Associations Center, 2221 University Avenue S.E., Suite 426, Minneapolis, MN 55414; 612/623-9559.

23-24 Obstetrics Update; St. Paul-Ramsey Medical Center & U of M Medical School, The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

April, 1984

2-3 Annual Ophthalmology Specialty Course; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

5-7 Second Annual Interdisciplinary Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza, St. Paul; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

6-7 Eye Enucleation; U of M Medical School; Jackson Hill, U of M, Minneapolis; CONTACT: Bart W. Galle, Ph.D., Interim Director, CME Office, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

12-13 Medical/Legal Issues in the 80's: Institutional Medical Staff Liability and Effective Medical Expert Testimony; St. Paul Ramsey Medical-Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-14 Eating Disorders Update: Anorexia Nervosa & Bulimia; University of Minnesota; Earle Brown Center, U of M; CONTACT: U of M CME, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

14 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, Mount Sinai Hospital, Medical Staff Office, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700.

14 Minnesota Society of Clinical Pathologists Spring Meeting; MSCP; Marriott Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director of Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., #400, Minneapolis, MN 55414; 612/378-1875.

20 Pediatric Challenges — 12th Annual Symposium for Primary Care Physicians; Minneapolis Children's Health Center; Minneapolis Children's Health Center; CONTACT: James Moore, M.D., Indian Health Board 2495 18th Avenue South, Minneapolis, MN 55404; 612/721-7425.

23-27 Family Practice Review: Update 1984; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

26-27 Pediatric Days; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

27-28 Ophthalmic Reviews; Mayo Clinic Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

April 30-May 4 Practice of Internal Medicine — 1984; Mayo Clinic/Mayo Foundation; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

May 1984

9-12 Minnesota Medical Association, Annual Meeting; MMA; Radisson South Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director, Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

10-12 42nd Annual Course in Allergy and Clinical Immunology; CME Office U of M Medical School; Mayo Memorial Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office, Box 193 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

11 ENT Primary Care: A Workshop; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Dr. Charles Drage, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3180.

17-18 Radiology Update; St. Paul Ramsey Medical Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

17-19 Topics and Advances in Pediatrics; Office of CME U of M Medical School; Mayo Memorial, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

23-25 Current Concepts in Radiation Therapy; Office of CME, U of M Medical School; Mayo Memorial Auditorium; U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

May 30 — June 1 Recent Advances in Laboratory Medicine; Office of CME, U of M Medical School; Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

June 1984

7-8 Clinical Nutrition for Practicing Physicians; St. Paul Ramsey Medical Center; The St. Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

20-21 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

July 27 — August 13 Summer Sportsmedicine Conference; North Central Medical Conference; Los Angeles, California; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

August 26 — September 1, 1984 Transplantation Society Congress; Office of CME, U of M Medical School; Orchestra Hall, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

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IDEAL PRACTICE OPPORTUNITIES for an Orthopedic Surgeon, an Obstetrician/Gynecologist, a Pediatrician and a General Surgeon in a community of 17,000 just 40 miles south of Minneapolis/St. Paul. Modern, well-equipped 99 bed hospital serving a 30,000 population base. Physician survey confirms needs. Varied cultural, educational and recreational opportunities within short distance. Contact Physicians Search Committee, District One Hospital, 631 S.E. First Street, Faribault, Minnesota 55021 or call 1-507-334-6451.

FAMILY PRACTITIONER — Join an active practice in Northern Minnesota. Two young F.P.'s are looking for one or two associates to replace retiring partner. Attractive clinic and 44 bed hospital in a friendly town of 2000. Contact W. Ofstedal, M.D., 218-435-1212, Fosston, Minnesota 56542.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

IMMEDIATE OPENING for primary care physician. Either Family Practice or Internal Medicine. Midway area of Saint Paul. Contact David Klevan, M.D. at 612-645-0711. 451 North Dunlap, Saint Paul, MN 55104.

FAMILY PHYSICIAN, board eligible, to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon in Blue Earth, Minnesota. \$45,000.00 plus incentive bonus first year with full membership after first year. 4,000 population with practice area of 25,000 in South Central Minnesota. Economy is stable agricultural plus small clean industries. Connected hospital and clinic enlargements now under construction. Complete ancillary support including anesthesiology, radiology, pathology, etc. Contact Marjeane Werner, Clinic Administrator or Dr. Thomas E. Watts, Business Phone: (507) 625-7371. Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013.

FAMILY PHYSICIAN FOR PROGRESSIVE RURAL MINNESOTA CLINIC. New and superbly-equipped facility. A pleasant farming community in a physician shortage area, yet only 25 minutes from a metro area. A comfortable call schedule at nearby hospital. Gateway to Minnesota's famous lake country. Young and growing practice with excellent salary and benefits, ownership potential. Must be board-eligible. Call or write to Mr. Ralph Solhjem or Faris Keeling, M.D. at 218-354-2111 or write to Barnesville Area Clinic, P.O. Box 521, Barnesville, MN 56514.

WANTED: Ob-Gyn, family practitioner, pediatrician and internal medicine to join multi-specialty group. One month vacation, hunting, fishing and lake recreation area. Starting salary excellent, many fringe benefits included. Write: MINNESOTA MEDICINE (735), 2221 University Ave. SE, Suite 400, Minneapolis 55414.

(Continued on page 60)

Classified Advertisements

(Continued from page 59)

INTERNIST-CARDIOLOGIST AND NEUROLOGIST — specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

THE BEMIDJI CLINIC is a 20 doctor multi-specialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary & fringe benefits offered. Currently recruiting for Board Certified Family Physician and Internist, preferably with subspecialty training. Contact D. E. Carlson at (218) 751-1280, Bemidji, MN (218) 243-3139 (Home)

POSITIONS AVAILABLE . . . For qualified physicians in Divisions of Family Practice and Psychiatry — Fergus Falls State Hospital — located in the Heart of Minnesota's 10,000 Lakes, Fergus Falls is a progressive community and provides an excellent health care setting. Consultant staff presently includes 9 family practitioners, 7 psychiatrists, a neurologist, physiatrist, pediatrician, 2 pathologists, and a surgeon — licensed for 206 chemically dependent patients, 135 mentally ill patients, and 256 mentally retarded residents, Fergus Falls State Hospital provides the only adolescent drug and dependency treatment program in the state system. For more information contact — Richard C. Baker, M.D., Medical Director, Fergus Falls State Hospital, Box 157, Fergus Falls, MN 56537 (218) 739-7396.

GENERAL INTERNIST — BC/BE needed immediately to join a ten member multi-specialty group in Southern Minnesota. Fairmont is a progressive city of 13,000 with excellent schools and recreational areas around a chain of five lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact Donald Grangenett, Fairmont Medical Clinic, P.A., Fairmont, Minnesota 56031. (507) 238-4263.

U.S. AIR FORCE MEDICAL CORPS Currently is accepting applications for physicians in the following specialties: Surgery (All Specialties), Obstetrics/Gynecology, Otorhinolaryngology, Anesthesiology, Psychiatry, Orthopedic Surgery. For further information call collect: Lt. Roger Kalonick 612-331-8216.

NEWER CLINIC BUILDING, 3800 Sq. Ft. @ \$6.00, River view, 5 blocks from hospital or downtown, ample parking. May rent total or partial footage. Replys may be sent to the Northland Clinic, 115 North First St., Brainerd, Minnesota 56401 1-218-829-3593.

FAMILY PHYSICIAN — 1 Family Practitioner is looking for an associate (Board certified/eligible) to join a progressive practice in Hastings, MN. Hastings is a pleasant community of 12,800 located just 30 minutes south of the St. Paul/Mpls. metro area. Must like Peds/OB. Contact Lea Hogan, M.D., 1718 Vermillion St., Hastings, MN. 55033. (612) 437-1133.

HOLISTICALLY ORIENTED physician desired to share thriving family practice in Duluth, Minnesota. Write or call: Neil Nathan, M.D., ABFP, 1358 W. Arrowhead Road, Duluth, MN 55811, (218) 724-8882

GENERAL SURGEON, Board certified or eligible, to join an eight doctor medical center. Located at International Falls, Minnesota. Outdoor paradise with Voyageurs National Park and Wilderness canoe area. Must be qualified to perform general surgery, including orthopedic and GYN procedures. Located 100 miles from Bemidji and 160 miles from Duluth. Known as the "Ice Box of the Nation" but only on weather maps. Contact Dr. George M. Crow or Dr. A. Marc Gorden, 218-283-9431.

MINNESOTA TRAINED PHYSICIAN (Internal Medicine Internship) seeks part/full time general practice, locum tenens, or emergency room work prior to beginning an emergency medicine residency July 1984. Available after January 9th, will consider any time period or Minnesota location. Excellent academic record, very strong curriculum vitae. 4217 Washburn Ave. S., Mpls, MN 55410 (612) 920-0563.

DERMATOLOGY DERMATOLOGIC SURGERY Well established, 26 years, solo practice and equipment for sale, retiring because of health. Modern office building, connected to large hospital in beautiful busy suburb of Minneapolis, renewable lease, good terms, will finance. Joseph G. Brennan, M.D., 611 Southdale Medical Bldg., Edina, Minnesota, 55435, Telephone: 612-927-6121.

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GRAND MARAIS, MINNESOTA. FAMILY PHYSICIAN to join clinic with three other physicians. Beautiful community bordered by the North Shore of Lake Superior and the Boundary Waters Canoe Area. Negotiable salary, with incentive bonus. Excellent benefits. Flexible hours. Share call. Position available January 1984. Send inquiries and curriculum vitae to: Rita Plourde, Cook County Community Clinic, Grand Marais, MN 55604; 1-218-387-2330.

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ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

LOCUM TENENS FAMILY PRACTICE opportunity available in northwestern Minnesota for April-August 1984. Spend the spring and summer months in the north and enjoy the benefits of rural living. We will pay well and provide good experience. Contact: Arnold L. Carriere, Administrator, Falls Clinic, P.A., P.O. Box 407, Thief River Falls, Minnesota 56701. Telephone (218) 681-4747.

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FAMILY PRACTICE POSITION available with a thirteen physician multi-specialty group in northwestern Minnesota. Prefer physician who can join the group by early spring. We provide an excellent salary guarantee and incentive formula along with a fine benefits package, including relocation costs. The area offers excellent outdoor recreational facilities, close to lake areas and a very progressive community of 10,000 people. Primary medical service area is a population of 30,000-40,000 people. Contact: Arnold L. Carriere, Administrator, Falls Clinic P. A., P. O. Box 407, Thief River Falls, Minnesota 56701. Telephone (218) 681-4747.

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EMERGENCY PHYSICIANS or primary specialists with ER experience: Full time practice opportunities available beginning January, 1984, in Minneapolis/St. Paul at our newest free-standing emergency centers. Admissions and referrals through a major Minneapolis teaching hospital. Excellent salary with opportunity to advance and join a physician partnership which develops, staffs and manages free-standing emergency centers and hospital E.D.'s nationally. Send CV to: Madeleine Shalowitz, M.D., The Flashner Medical Partnership, The Doctors Emergency Officenters, 830 E. Rand Road, Mt. Prospect, IL. 60056.

Classified Advertisements

(Continued from page 61)

ORTHOPEDIC SURGERY — LA CROSSE, WISCONSIN
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STAFF PSYCHIATRIST CMHC has an excellent opportunity for a staff psychiatrist. Must be board eligible. Programs include in-patient, out-patient, education and consultation, specialized services to children, the chronically mentally ill, and the chemically dependent delivered in conjunction with a seasoned team of multi-disciplinary mental health professionals including two part-time psychiatrists. Excellent four-season recreational area. Salary and fringe benefits negotiable. Contact: Donald E. Frees, ACSW, Area Program Director, P.O. Box 646, Bemidji, MN 56601. An Equal Opportunity Employer.

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PHYSICIAN DESIRES TWO (2) other Doctors to share large office, downtown Minneapolis. Approx. monthly rent, utilities, phone, etc. would be \$700-800. Call: 612-870-8448.

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- Contraindicated in patients who are pregnant or hypersensitive to flurazepam.
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References: 1. Kales A et al: *J Clin Pharmacol* 17:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. 2. Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 3. Zimmerman AM: *Curr Ther Res* 13:18-22, Jan 1971. 4. Kales A et al: *JAMA* 241:1692-1695, Apr 20, 1979. 5. Kales A, Scharf MB, Kales JD: *Science* 201:1039-1041, Sep 15, 1978. 6. Kales A et al: *Clin Pharmacol Ther* 19:576-583, May 1976. 7. Kales A, Kales JD: *Pharmacol Physiol* 4:1-6, Sep 1970. 8. Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc* 27:541-546, Dec 1979. 9. Dement WC et al: *Behav Med* 5:25-31, Oct 1978. 10. Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 11. Karacan I, Williams RL, Smith JR: The

sleep laboratory in the investigation of sleep and sleep disturbances. Scientific exhibit at the 124th annual meeting of the American Psychiatric Association, Washington, DC, May 3-7, 1971. 12. Pollak CP, McGregor PA, Weitzman ED: The effects of flurazepam on daytime sleep after acute sleep-wake cycle reversal. Presented at the 15th annual meeting of the Association for Psychophysiological Study of Sleep, Edinburgh, Scotland, June 30-July 4, 1975. 13. Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

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Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

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Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase; and paradoxical reactions, e.g., excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect. **Adults:** 30 mg usual dosage; 15 mg may suffice in some patients. **Elderly or debilitated patients:** 15 mg recommended initially until response is determined.

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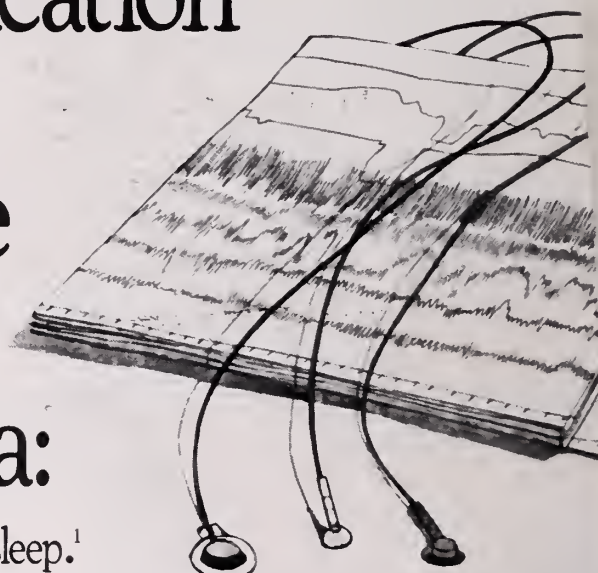
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- More total sleep time on the first 3 nights of therapy.¹
- More total sleep time on nights 12 to 14 of therapy.¹
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Like you, we think in terms of programs instead of projects.

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At our agency, you'll work with people who create campaigns that involve every phase of your marketing program. In product development, packaging, sales promotion and advertising, we look for the enduring ideas. The competitive edge.

Our creative philosophy is simplicity itself.

If you believe in the power of a single idea, clearly stated, we share the same philosophy.

In our experience, the strongest ideas are the ones that, ironically, cannot stand alone. They need supporting evidence, or a reason why

the product can deliver on such a strong promise. Our copy strategies contain a strong benefit statement supported by product attributes or vivid imagery.

We believe headlines which contain more than one thought seldom get a second thought. So we avoid manufactured headlines that string benefits together in conveyor belt fashion.

The thinking doesn't stop when the ad is approved.

Yes, the copy strategy is important. But words alone are not enough, because, without added production values, everyday words lose their meaning. In fact, the 500 most commonly used words have 14,000 different meanings.

There comes a point in the creative process where language and logic fail you; where experience and intuition take over. Because there are some things that can't be expressed in words or formulas. Things like joy and sorrow, fear and bravado. The emotions can't be reduced to a mathematical equation. But they can be expressed in non-verbal, graphic or musical terms: the production values.

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MARKETING AND ADVERTISING

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of ampicillin resistance in
Haemophilus influenzae

Ampicillin Resistant
Haemophilus influenzae

H. influenzae

S. pneumoniae

Brief Summary. Consult the package literature for prescribing information.

Indications and Usage. Cefaclor* (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci).

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Cefaclor.

Contraindication. Cefaclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings. IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics including Cefaclor should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions. General Precautions—If an allergic reaction to Cefaclor occurs, the drug should be discontinued and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Cefaclor may result in the overgrowth of non-susceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Cefaclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Cefaclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinette[®] tablets but not with Tes-Tape[®] (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy.—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cefaclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response this drug should be used during pregnancy only if clearly needed.

Nursing Mothers.—Small amounts of Cefaclor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21 and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one

Some ampicillin-resistant strains of *Haemophilus influenzae*—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Cefaclor.¹⁻⁶

In clinical trials, patients with bacterial bronchitis due to susceptible strains of *Streptococcus pneumoniae*, *H. influenzae*, *S. pyogenes* (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Cefaclor.⁷

Cefaclor[®]

cefaclor

Pulvules[®], 250 and 500 mg

hour. The effect on nursing infants is not known. Caution should be exercised when Cefaclor* (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children.—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions. Adverse effects considered related to therapy with Cefaclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 20 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis, arthralgia and, frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cefaclor. Such reactions have been reported more frequently in children than adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain.—Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic.—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematologic.—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal.—Slight elevations in BUN or serum creatinine (less than 1.50) or abnormal urinalysis (less than 1 in 200).

[061782]

*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.
Note: Cefaclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Additional information available
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Annual Subscription — \$18.00. Single copies — \$1.50.
Canadian — \$20.00. Foreign — \$30.00.

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President's Letter



Derivatives of Ergon

The dinosaurs really had it good. For a time span of approximately 100 million years they developed and flourished a degree of biological and environmental stability that is different for the human mind to encompass. The existence of homo sapiens is frequently stated as 35,000 years and that of hominid forms of prehuman species is approximately 3 million years. Thus, dinosaurs existed 33 times as long as hominids and nearly 3,000 times as long as human beings have existed. If they had possessed minds capable of creating a perspective, they would certainly have had reason to be pleased with themselves and their lot. They were the dominant biologic form. They could have regarded their environment as permanent and probably would have taken their future existence for granted. Perhaps, they even would have adopted a sense of accomplishment and achievement, failing to realize that their long survival related more to the stability of their environment than to their own resilience, flexibility, or toughness.

One day, approximately 70 million years ago, an asteroid (a huge meteor — an estimated six miles in diameter) struck the earth with such impact that it penetrated the crustal rock and punched a hole through to the molten material beneath. As the dinosaurs' bad luck would have it this collision took place at the junction of two crustal plates where the rock is the thinnest and where molten rock is the closest to the surface. There ensued an eruption of such magnitude that in a few days' time the earth was encircled with clouds of ash so dense that the sunlight was nearly obliterated and the earth's temperature fell several tens of degrees. The location of this collision and subsequent eruption we now call Iceland.

The dinosaurs for all of their stability and longevity were all dead, probably within a few days along with a large percentage of flora and fauna. It has been

known to evolutionary biologists as the Great Cretaceous Extinction. There are thought to have been six such mass extinctions in evolutionary history.

The point that I wish to derive from this is that the stability of the dinosaurs laid with the stability of their environment rather than their own intrinsic properties. Other life forms, of course, survived the same catastrophe having within their biologic systems and genetic pools the potential properties necessary to make the immediate adjustments required.

There is a close similarity between organisms and organizations as the similarity in the words suggests. The root word "organ" comes from the Greek word for work — "ergon." Thus both organisms and organizations consist of groups of systems that do work collectively in a coordinated manner to allow for a continued existence of the whole. Some of these systems relate to each other, and some relate to the environment directly. Thus an organ from a biologic frame of reference is a collection of systems and structures that performs work. In an ascending scale, an organism is a unit which consists of a coordinated group of organs which can perform work on a higher plain. An organization is a collection of organisms also which can perform work on a larger scale or plain, be it bee colonies or voluntary professional organizations.

An organization, therefore, is structured like a living organism. Part of the organization's energy needs to be devoted to the satisfaction of the component parts legitimate self interests (that is — its economy). Part of its energy needs to be devoted to the interaction of the organization with the environment in which it exists. The survival of the organization depends on both, and the resilience of these functions in the face of a changing and threatening environment determines the life span of the whole. A rabbit may

PRESIDENT'S LETTER

die because of a disruption of its internal organ systems caused by disease or may be perfectly healthy and die because it does not adequately cope with its environment because of a hawk which it does not see or hear in time to escape. Similarly an organization may fail because it does not adequately satisfy economic realities. This may be from a budgeting standpoint or from a failure to satisfy the realistic economic concerns of its members. On the other hand it may also cease to exist because it does not relate meaningfully to society's needs. No accumulative past virtue and no sentimentality existed to save the dinosaurs. Neither will such factors work on the behalf of the medical profession.

This all comes to mind as relates to the American Medical Association which has recently completed its interim meeting.

The transformation of the health care delivery into a commodity to be treated as any other item of commerce is no less a radical transformation of our professional environment than the asteroid collision was for the dinosaurs. Our existence as an independent profession, in my judgment, rests in part on the effectiveness of our professional organization in working to salvage professionalism while at the same time allowing physicians as a profession to adopt to this new environment.

Part of the work this organization does is intrinsic. It is working for our legitimate self interest. Our professional independence has to have an economic base, analogous to the systems of nutrition, respiration, temperature regulation, etc. of any organism. The recent AMA Interim Meeting considered 44 items pertaining to professional enhancement either establishing or reestablishing them as policy. Example:

1. *Reestablish the policy that physicians have the right to establish their own fees.*
2. *Reestablish physicians' right to balance bill for difference between their charges and insurance payments.*
3. *Recommended that hospital staffs have their own attorney.*
4. *Established policy against pharmacists being allowed to perform therapeutic substitutions or to directly advertise prescription drugs.*
5. *Studied implication and effects of satellite and investor owned clinics with the intent of establishing policy based on such studies.*

The intrinsic concerns of our organization include our own internal standards of education and performance. Fifteen such items were considered at this meeting.

Examples:

1. *Studied the reason for continued increase in cost of medical education.*
2. *Studied the effects of for-profit hospitals on medical education.*
3. *Accepted a report on the problems of foreign medical graduate students.*
4. *Accepted a report on the AMA's vast new computer information project (GTE) for available knowledge of clinical and social economic value for doctor's offices.*
5. *Issued a report on Peer Review Improvement Act.*

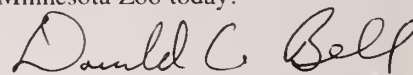
The organization considered 39 items that pertained to our intrinsic function of improving the health of the public. Unless we satisfy the medical care needs of our society we will and should disappear as an independent profession. Examples:

1. *Promoted further reduction of smoking in our society.*
2. *Studied effects of exercise on the elderly.*
3. *Promoted reduction of allowable formaldehyde concentration of new housing.*
4. *Promoted a study of the financing of organ transplants and selection of recipients.*
5. *Promoted the concept of risk pooling in health insurance to make insurance more available to those in compromised health.*
6. *Addressed the burgeoning ethical problems produced by advancing technology in the beginning and ending periods of life.*

The structure of the Federation of Medicine is ideal for the participation of each physician or group of physicians with common interests. Those items identified above were but a small sampling of the vast array of concerns addressed by our organization at this recent convention. A new and different array of concerns and actions occur each six months.

The Federation of Medicine, thanks to its leadership and contribution of its members, has an economic stability and a degree of expertise, political ability, and sincerity of purpose which makes it a very competent and effective instrument with which we can strive to cope with our radically changed and ever changing environment.

I believe that probably if the dinosaurs had been able to address their intrinsic and extrinsic needs with a similar capability we would probably have a brontosaurus in our Minnesota Zoo today.



Donald C. Bell, M.D.
President

Minnesota Medical Association



Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: Marketing and Advertising of Health Care in the Twin Cities

Third of A Series

"Nonprofit organizations face a host of problems that would be analyzed as straightforward marketing problems if found in the profit sector . . . But what is marketing? Marketing is the effective management by an organization of its exchange relations with various markets and publics . . . The transposition of a conceptual system from one domain (the private sector) to another (the nonprofit sector) poses a number of challenges that call for creative translation. The concepts of product, price, promotion, distribution, have to be redefined for maximum relevance to all organizations."

Philip Kotler, *Marketing for Nonprofit Organizations*,
Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1982

"To know what a business is we have to start with its purpose. Its purpose must lie outside of the business itself. In fact, it must lie in society since business enterprise is an organ of society. There is only one valid definition of business purpose: to create a customer."

Markets are not created by God, by nature, or economic forces but by businessmen . . . Because its purpose is to create a customer, the business enterprise has two — and only these two — basic functions: marketing and innovation . . . Marketing is the distinguishing, unique function of the business. A business is set apart from all other human organizations by the fact that it markets a product or a service."

Peter, F. Drucker, *Management*, Harper & Row, New York,
Evanston, San Francisco, and London, 1973

MINNEAPOLIS — In my last editorial, I promised you the third in this series of editorials would be on "Marketing and Advertising of Health Care in the Twin Cities." I may be biting off more than you or I can digest. After all, as professionals, we often frown on marketing and advertising. As physicians, we tend to share the ethically pure moral view that: (1) health care is an absolute good; (2) people have a right to good health care; and (3) physicians have the pre-ordained right to do as they please. Because we physicians feel we are on such high moral ground, we have a compulsion to denigrate marketing or other corporate practices that contribute to "the bottom line." But I shall have a go at the editorial anyway.

Two Hunches

In writing this, I am playing two hunches: (1) as professionals, you are leery, cynical, skeptical, but perhaps vague about the practices of marketing and advertising; (2) as observers of and participants in health care competition, you are still curious how health care is marketed and advertised. These are not idle hunches because the field of marketing for physicians is booming. Indeed, the Minnesota Medical Association has formed a network of 15 marketing consultants should you choose to use its services. (For information, call Harry Bradley or Laura Grygar, at 1-612-378-1875, or write them, at Minnesota Medical Services Corporation, 2221 University Avenue, Minneapolis, Minnesota 55414).

Physicians' Reactions to Advertising

If there's one aspect of the new competitive health care environment that offends physicians, it's advertising. Hearing WCCO announcer, Howard Viken, intone the virtues of SHARE's Senior Plan has made many a physician's blood boil ("Can you imagine," one doctor snapped, "he's not even a member of the plan." "Why doesn't he say he's doing a paid advertisement," snorted another). Such personal feelings do not concern advertising people, whose aim is to boost SHARE's name recognition. When HMO-Minnesota counters with retired WCCO announcer, Jergen Nash, physicians react again. Then, too, you can fume at those 30 second spots on public radio and television, those giant highway billboards, those full-page HMO ads during open-enrollment time, and those hospital multimedia image-building binges. What is the individual doctor going to do in the face of this onslaught? How is he going to throw the money changers out of the temple?

Given this fuming state of mind, if you really want to get riled, you can go to the Department of Health of the State of Minnesota and see the actual HMO expense figures on "advertising and printing," which, by law, HMOs must submit by April 1st of each year. The 1983 figures are not available, but my sources inform me collective 1983 advertising revenues for HMOs will jump "conservatively" by at least one-third and probably by one-half (hospital advertising will surely increase proportionally). At any rate, here are the official HMO "advertising and printing" expenses from five Twin Cities HMOs as reported to the Minnesota Department of Health.

HMOs	TABLE		
	1981	1982	Percent Increase
SHARE	\$300,748	\$588,632	96%
Physicians Health Plan	\$410,586	\$440,209	7%
Group Health, Inc.	\$295,696	\$434,820	47%
MedCenter	\$401,103	\$668,414	67%
HMO-Minnesota	\$232,522	\$260,083	12%

Two Essential Points about Marketing

If you share these negative attitudes, you may be missing two essential points: (1) advertising, or any other form of promotion, is only the surface part of marketing. It is the part you do after you define what your service is, analyze your market, and decide what your clients need. Indeed, good marketing can make selling, advertising, and public relations unnecessary. The aim of health care marketing is to know your organization's customers so well that your services fit their needs so well that the services sell themselves; (2) most non-profit organizations — churches, police departments, universities, political parties, public schools, municipalities, social action groups, charities, social agencies, museums, symphonies, libraries, foundations, zoos, and even the U.S. Post Office — are already heavily engaged in marketing. These organizations, like health organizations, depend on pleasing, motivating, or recruiting those outside to exist.

Arnold Relman, Editor of the *New England Journal of Medicine*, has argued that business is bad for health care because businesses must market to grow, and, in so doing, sell too many services and increase utilization. This, he feels, goes against the spirit of lower utilization and cost containment. This may be, but in the last few years in the city where he resides, these hospitals — University Hospital (Boston), Malden Hospital (Malden), Deaconess Hospital (Boston), and Union Hospital (Lynn) — have named marketing directors and announced marketing programs.

The Good Old Days

Remember the good old days when your fellow physicians were collegial colleagues; when hospitals were charitable institutions catering to the sick; when there were too few doctors for too many patients; when your success depended on your reputation among your peers; when you built your practice in a year or two and paid off your banker; when

you and your office girl handled all your office affairs; when your hospital was so filled you pleaded for more beds; when your office was so crowded you never caught up with your appointments; when word of your medical skills spread by mouth from one patient to another and from one doctor to another; when you were one of the few specialists around; when marketing was unnecessary because being a good doctor with good bedside skills was enough; and when advertising was taboo. Those days are over for you and the hospitals.

What has happened to transform Medicine from a profession that banned advertising to a competitive enterprise whose members talk openly of marketing? It is called the *management revolution*. We are the last bastion of society to require the skills of trained managers. Drucker explains what has happened this way.

"Our society has become, within an incredibly short fifty years, a society of institutions. It has become a pluralistic society in which every major social task has been entrusted to large organizations — from producing economic goods and services to health care, from social security and welfare to education, from the search of new knowledge to the protection of the natural environment."¹

Physicians have, in short, finally have been caught up in the entrails of large organizations who have the power to market services, to finance high technology, to broker for patients of other large organizations, and to compete with, to control and to employ physicians. Viewed in the eyes of health care corporate executives, physicians are part of their supply and distribution systems.

The New Visibility of Marketing and Advertising

So why has marketing, and its byproduct, advertising, become so visible in the last two years? Because under the stress of a recession, exploding health costs, and a coalition of various forces in society bent on containing those costs, hospitals and physicians have been forced to become businesslike to survive, because organizations can grow only by marketing services and products, because health care organizations are hiring more and more people trained in business, and because growth and survival strategies are demanding organizations ask the right questions: Who are our customers? What is our purpose? Where are we making money? Where are we losing money? What are our costs? Which services should we add? Which ones should we give up? What does the public think of us? What's our image? What are we good at? Where are the opportunities in times of change?

For the larger organizations and now for physician groups and even solo doctors, answering these questions will require the marketing approach. *When too many physicians, too many HMOs, and too many hospitals are competing for too few patients, marketing is an inevitable consequence.* Those of us who yearn for the good old days are naive. Those of us who complain about marketing raising the cost of health care, commercializing our practices, encroaching on our patients' private lives, and manipulating the public and our colleagues may be right. But if the present competitive forces continue, these complaints will not lessen the demand for the discipline of marketing.

Interviews with Health Care Marketing People

For the last three weeks or so, I've been interviewing a dozen marketing people from the Minnesota Medical Association, Twin Cities' hospitals, and Twin Cities' HMOs. I've asked them what is going on in health care marketing and advertising, where their organizations fit in the scheme of things, how they hope to position their organizations, and how they see the field of health care marketing evolving.

During these interviews, the marketing people have patiently informed, educated, and occasionally depressed me. From them I've learned to talk about market segmentation, market mix, market share, product line, target markets, positioning, channels of dis-

tributions, strategic thinking, name recognition, impact measurement, and the four Ps of marketing — product, price, promotion, and place.

To fill in my remaining cerebral holes, I've read books on managing, marketing, and advertising. In my judgment, the three best marketing books to read are: (1) *THE MARKETING OF NONPROFIT ORGANIZATIONS*, second edition, by Philip Kotler, Professor of Marketing at Northwestern University School of Business, Prentice-Hall, Inc., 1982; (2) *CAN HOSPITALS SURVIVE? THE NEW COMPETITIVE HEALTH CARE MARKET*, by Jeff Goldsmith, a health care consultant who is President of Health Futures, Inc., Dow Jones-Irwin, 1981; and (3) *HEALTH CARE MARKETING PLANS FROM STRATEGY TO ACTION*, by Steve Hillestad, Vice-President of Marketing at Abbott-Northwestern Hospital in Minneapolis, and Eric Berkowitz, Associate Professor of Marketing at the University of Minnesota School of Business, Dow Jones-Irwin, 1984. Neither the interviews nor my reading qualify me as an expert, or even as a professional amateur, on health care marketing. But at least I have these educated opinions.

- Marketing is in its infancy in health care organizations, but the infant is precocious, and this year will consume ten times more revenues than it did just two years ago.

- Marketing is becoming a central part of the strategic planning of large health care organizations, and a few marketing people are becoming senior executives reporting directly to the Chief Executive Officer.

- Marketing is nothing more or less than seeing the whole organization from the point of view of the customers. (This sounds simple, but it is not. Both HMOs and hospitals may have multiple customers — patients, physicians, the general public, the business community, the government, the Medicare population, and so forth).

- Savvy marketing people regard the public faces of marketing — promotion, selling, salesmanship, and advertising — as secondary to marketing analysis, management, and budgeting of resources for marketing.

- Marketing is more sophisticated, and its impacts easier to measure in HMOs, which are still growing at 20 to 40% a year, than in hospitals, which are contracting their occupancies, experimenting with outside services, and restructuring — often all at the same time.

- Only recently have HMO and hospital marketing programs become defined or big enough to attract advertising agencies willing to risk their reputations on what they consider to be a chancy field.

- The promotional aspects of health care marketing may be overemphasized and may well prove disappointing (As one marketing man said to me: "In two years, you're going to see a lot of scalps of hospital promoters hanging around the fireplace.")

- The current craze is positioning ("competitive positioning is the art of developing and communicating differences between one's offer and those of competitors serving the same target market").²

Hospitals, and to a lesser extent HMOs, are striving to differentiate their services and their images.

Limits of Promotion

Many of the marketing executives to whom I talked emphasized the limits of promotion. One commented: "I like to give the example of the Curtis Hotel. Fifteen years ago, the Curtis Hotel was the biggest drawing magnet for people coming to the cities from outstate Minnesota. But the Curtis' markets gradually eroded. Then, a couple of years back, a group of businessmen bought it, added a disco and a few other embellishments, promoted the hell out of it, and waited for the crowds to roll back in. They never came because the businessmen didn't analyze their marketing problems. They overemphasized promotion at the expense of their basic product, which was still obsolete, still off the skyway system, and still away from the center of action. You don't wrap an old product in a new package and get away with it. You have to change and to analyze your markets."

Ed Fredrickson, a Professor of Marketing at St. Thomas School of Business, and the lead consultant for the new marketing program for the Minnesota Medical Association, has written: "I see the possibility that marketing in health service organizations may suffer a setback during the next two or three years when top administrators feel that marketing is not delivering what they promised. As a result, 'heads will roll' and marketing will suffer." He feels the reasons for this are: (1) few health service organizations have given the marketing function enough power and authority to carry out its task; (2) few health service organizations have given the top marketing person enough power and resources to carry out their responsibilities; (3) few health service organizations have hired people with enough marketing background and proven track records; and (4) few administrators of health care organizations truly understand marketing.

Examples of Print Advertising

This editorial would not be complete if I did not give examples of how advertising is being carried out. The pages of a journal do not lend themselves to showing examples of many media, so I shall restrict this to headlines of ads that have appeared in newspapers. Up until this point, physicians have not used newspaper advertising to any significant extent in the Twin Cities. So here I give examples of HMO, hospital, Blue Cross/Blue Shield, and one day surgery ads. To keep this simple and within the confines of this editorial, I shall restrict these examples to headlines. These headlines will be enough to give you the drift of current newspaper advertising campaigns. Headlines can tell a lot. As David Ogilvy, perhaps the most famous of current advertising men, notes: "The headline is the important element in most advertisements. It is the telegram which decides the reader whether to read the copy. On the average, five times as many people read the headline as the body copy."³

Hospitals

1. Fairview Community Hospitals

One third of the people who die of sudden heart attacks never make it to the hospital. Get close to your heart.

You're scheduled for Same-Day Surgery, September 25.

Eight trips to our breathing clinic now may save you a trip to the hospital later.

Your heart is like a doctor. Listen carefully.

Your body may be telling you something about Vitamin C. It's a good subject to discuss with a doctor.

2. United Hospitals and Children's Hospital of St. Paul

There are two vital reasons why you should come to us: What you're expecting and what you're not. Perinatal Center.

3. Mounds Park Hospital and Midway Hospital

Our most important Asset ... Dedicated Personnel.

4. Mercy Medical Center and Unity Medical Center

Recuperate in the comfort of your home with hospital services to go.

5. Metropolitan Medical Center

What you are looking at is the most powerful medical tool ever created.

The heart of the city has never been healthier.

Health Maintenance Organizations

1. SHARE

SHARE opens unique medical center: gala festivities mark weekend.

Try three months of SHARE Senior Care absolutely free.

When employers offer HMOs, SHARE is the growing choice.

2. HMO-Minnesota

"Take it from me, Seniors, HMO-Minnesota has ever more doctors at more locations for less." Jergen Nash "Famous Older Person"

If you like bootcamp, you'll love most HMOs.

"Come see why Medicare and More is healthy for you and your budget." Jergen Nash "Famous Older Person"

3. Physician's Health Plan

Why 1/2 million Minnesotans think Health Maintenance Organizations are good medicine.

Hold on to your doctor and your money, with PHP + Medicare.

4. MedCenter Health Plan

How do I control my medical costs when the Medicare system is sicker than I am?

For some, the Nicollet-Eitel and MedCenter merger may also be a marriage of convenience.

At MedCenters, we think charging a deductible is adding insult to injury.

At MedCenters, no prescriptions will cost more than \$3.00. Doctor's orders.

The only bill you'll ever receive from MedCenter is a clean bill of health.

5. Group Health, Inc.

This spring, Group Health Inc. will be part of the downtown circulatory system.

If people were as careful choosing a health plan as they were in buying a house, they'd probably have a long lease on life.

Eight new reasons State and University employees should choose Group Health, Inc.

If people would choose their doctor as carefully as they choose a car, they'd get more mileage out of their bodies.

If you're reading this ad in a Group Health, Inc. waiting room, chances are you won't have time to finish it.

Blue Cross and Blue Shield

Blue Cross and Blue Shield of Minnesota introduces AWARE CARE, a money saving breakthrough in health care coverage.

Minneapolis Single Day Surgery Center

You're invited to an Open House at the all-new Minneapolis Sing Day Surgery Center.

Comments on Ads

In reading through the ads with the above headlines, I was not taken back by any of the copy. Most of the ads were strictly informational, and in that sense, performed a public service. Others, especially the Fairview Community Hospitals ads, had educational value for the public. Still others related to "place", i.e., the number of convenient locations where satellite clinics can be found. Hospital ads tend to concentrate on image building ("The Loving Arms of Abbott-Northwestern") or on special services — heart units, breathing clinics, perinatal care, home services — or on the especially competent people who work for or who serve the hospital.

The HMO ads often dealt with price, but the hospital ones did not. I don't want to imply hospitals are insensitive to price. They are sensitive, but to group markets rather than the public market. Many Twin Cities hospitals are discounting prices to groups, and the groups, in their own turn, are forcing hospitals to discount prices. The WALL STREET JOURNAL has dubbed these pricing practices "survival tactics". The AWARE CARE ad was clearly an attempt to deal with HMO price competition. Group Health, Inc. (who recently changed their logo and their name to include the "Inc."), is capitalizing on its track record of being the oldest and most established, its time responsiveness in its

offices, and special markets in the educational establishment. MedCenter has done its research, which indicated people are sick and tired of paperwork, unexpected multiple bills, and high costs of prescriptions. SHARE is obviously playing the name recognition game. You rarely read, hear, or see a SHARE ad that doesn't hit you between the eyes with its name. For its ad with the headline, "If you like bootcamp, you'll love most HMOs," which asserted most other HMOs were run like military bootcamps. HMO-Minnesota earned the eminence of other HMOs and became the subject of a MEDICAL ECONOMICS article on the ferocity of Twin Cities HMO competition.⁵ Physicians Health Plan, an HMO that proportionally spends less on advertising, puts in its plugs for "your own doctor" and for the legitimacy of HMOs. Although the HMOs are playing different advertising games, their underlying marketing theme is to push the broadest plans at the lowest prices, particularly in the senior care markets. The time for overt price competition for HMOs has come. This is not yet true for hospitals, whose main customers are physicians. "Physicians," one hospital administrator informed me, "are purchasing agents, and I doubt if any advertisement will motivate any physician to admit or to refer a single patient to a hospital."

Conclusions

Within the last two years, the marketing movement has picked up steam and momentum in the Twin Cities. Two years ago, probably less than a million dollars was spent on advertising by HMOs and hospitals. In 1984 this figure may top ten million dollars. The HMOs are trying to build enrollments by offering broad services at low prices and larger enrollments makes a clear target for HMO marketing directors to aim at. The hospitals are trying to build images, identities, and outside services, but the ultimate goals of hospital marketing directors are much fuzzier because hospital marketing is so new, because the impact of advertising is still unknown, and because the importance of price is yet unsettled.

Most Twin Cities hospitals are adding marketing directors and launching marketing programs. These programs are still too young for anyone to judge their effectiveness. For the physicians, marketing is just beginning. The Minnesota Medical Association has developed a marketing program and has 15 consultants available for members of the Association. Most physicians will probably approach their marketing strategies by simply offering good care, establishing offices in convenient locations, extending their hours, keeping their appointment schedules, and defining their special skills. Others will choose a formal marketing analysis with goals and a marketing program. In the Twin Cities environment, physician advertising is as yet minimal and may be counterproductive in the medical community but is as yet untested among the general public.

Richard L. Reese MD

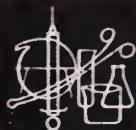
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BRIEF SUMMARY

PROCARDIA® (nifedipine) CAPSULES

For Oral Use

INDICATIONS AND USAGE: I. **Vasospastic Angina:** PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation; 2) angina or coronary artery spasm provoked by ergonovine; or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and/or adequate doses of beta blockers.

II. **Chronic Stable Angina (Classical Effort-Associated Angina):** PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS: Known hypersensitivity reaction to PROCARDIA.

WARNINGS: **Excessive Hypotension:** Although in most patients, the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PROCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation. It is important to taper beta blockers, if possible, rather than stopping them abruptly before beginning PROCARDIA.

Congestive Heart Failure: Rarely patients, usually receiving a beta blocker, have developed heart failure after beginning PROCARDIA. Patients with aortic stenosis may be at greater risk for such an event.

PRECAUTIONS: **General:** **Hypotension:** Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug interactions: Beta-adrenergic blocking agents. (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates. PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis: Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility: When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy: Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients; transient hypotension in about 5%; palpitation in about 2% and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication. Additionally, the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PROCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT, and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PROCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PROCARDIA therapy, has been reported twice in the extensive world literature.

HOW SUPPLIED: Each orange, soft gelatin PROCARDIA CAPSULE contains 10 mg of nifedipine. PROCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66), 300 (NDC 0069-2600-72) and unit dose (10x10) (NDC 0069-2600-41). The capsules should be protected from light and moisture and stored at controlled room temperature 59 to 77°F (15 to 25°C) in the manufacturer's original container.

More detailed professional information available on request.

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Quotes from an unsolicited letter received by Pfizer from an angina patient. While this patient's experience is representative of many unsolicited comments received, not all patients will respond to Procardia nor will they all respond to the same degree.

"My daily routine consisted of sitting in my chair trying to stay alive."

"My doctor switched me to PROCARDIA[] as soon as it became available. The change in my condition is remarkable."*

"I shop, cook and can plant flowers again."

"I have been able to do volunteer work...and feel needed and useful once again."

PROCARDIA can mean the return to a more normal life for your patients—having fewer anginal attacks,¹ taking fewer nitroglycerin tablets,² doing more, and being more productive once again.

Side effects are usually mild (most frequently reported are dizziness or lightheadedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%).



for the varied faces of angina

PROCARDIA[®] **(NIFEDIPINE)** Capsules 10 mg

Procordia is indicated for the management of:

- 1) Confirmed vasospastic angina.
- 2) Angina where the clinical presentation suggests a possible vasospastic component.
- 3) Chronic stable angina without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or nitrates or who cannot tolerate these agents. In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks' duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in these patients are incomplete.

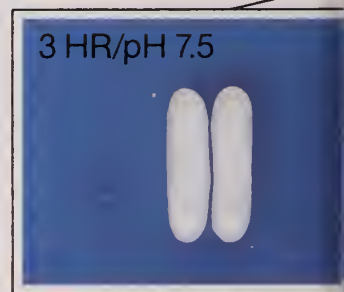
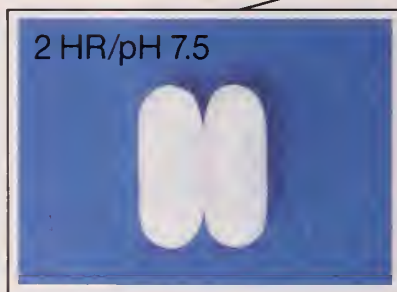
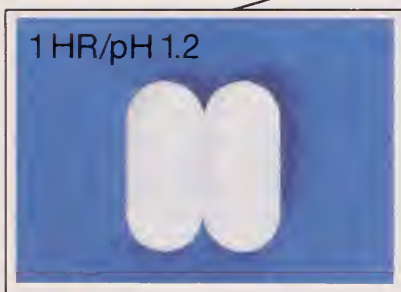
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(ASPIRIN) ZERO ORDER
RELEASE

Arthritis Therapy That Checks Out.

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- ☒ Zero-order release delivers drug at a constant rate, reducing serum peaks and valleys.



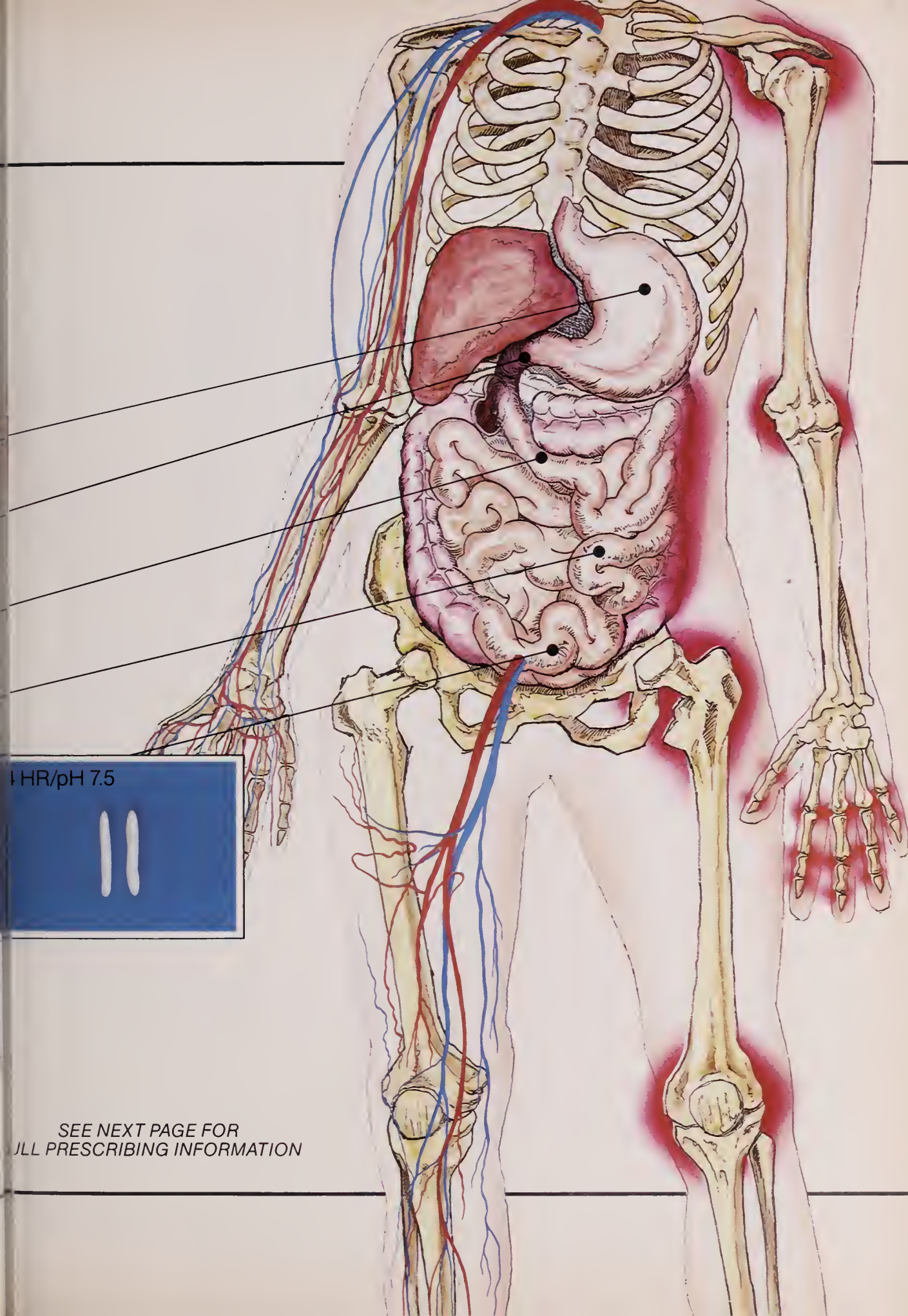
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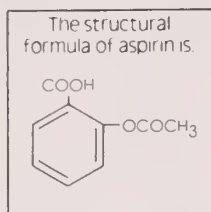
HR/pH 7.5



SEE NEXT PAGE FOR
ALL PRESCRIBING INFORMATION

ZORprin (ASPIRIN) Zero-Order Release

DESCRIPTION: Each capsule-shaped tablet of Zorprin contains 800 mg of aspirin, formulated in a special matrix to control the release of aspirin after ingestion. The controlled availability of aspirin provided by Zorprin approximates zero-order release, the *in vitro* release of aspirin from the tablet matrix is linear and independent of the concentration of the drug. **CLINICAL PHARMACOLOGY:** Aspirin, as contained in Zorprin, is a salicylate that has demonstrated anti-inflammatory and analgesic activity. Its mode of action as an anti-inflammatory and analgesic agent may be due to the inhibition of synthesis of prostaglandins, although its exact mode of action is not known. **Zorprin dissolution is pH-dependent.** *In vitro* studies have shown very little aspirin to be released in acidic solutions, whereas, Zorprin releases the majority of its aspirin (90%) in a zero-order mode at a neutral to alkaline pH. It is this pH dependence of Zorprin that reduces direct contact between aspirin and the gastric mucosa, resulting in a reduction of its gastrointestinal side-effect potential. **Bioavailability data for Zorprin have confirmed that plasma levels of salicylic acid and acetylsalicylic acid can be measured 24 hours after a single oral dose.** This substantiates a twice daily dose regimen. Multiple dose bioavailability studies showed similar steady-state salicylate levels for Zorprin as for conventional release aspirin using the same total daily dose. Long-term monitoring of salicylate levels showed no signs of accumulation once steady-state levels were reached (4-6 days). **Studies of *in vivo* prostaglandin levels (PGE2) have shown Zorprin plasma levels of salicylic acid and acetylsalicylic acid to reduce PGE2 levels 14 hours after a single oral 800 mg dose while an equivalent dose of aspirin produced a reduction of PGE2 levels only through six hours.** Zorprin's effect on prostaglandins other than PGE2 has not been determined. **Salicylates are excreted mainly by the kidney, and from studies in humans it appears that salicylate is excreted in the urine as free salicylic acid (10%), salicylic acid (75%), salicylic phenolic (10%), acyl glucuronides (5%) and gentisic acid (<1%).** **INDICATIONS & USAGE:** Zorprin is indicated for the treatment of rheumatoid arthritis and osteoarthritis. The safety and efficacy of Zorprin have



not been established in those rheumatoid arthritis patients who are designated by the American Rheumatism Association as Functional Class IV (incapacitated, largely or wholly bedridden, or confined to wheelchair, little or no self-care). **In patients treated with Zorprin for rheumatoid arthritis and osteoarthritis, the anti-inflammatory action of Zorprin has been shown by reduction in pain, morning stiffness and disease activity as assessed by both the investigators and patients.** **In clinical studies in patients with rheumatoid arthritis and osteoarthritis, Zorprin has been shown to be comparable to conventional release aspirin in controlling the aforementioned signs and symptoms of disease activity and to be associated with a statistically significant reduction in the milder gastrointestinal side effects (see ADVERSE REACTIONS).** Zorprin may be well tolerated in some patients who have had gastrointestinal side effects with conventional release aspirin, but these patients when treated with Zorprin should be carefully followed for signs and symptoms of gastrointestinal bleeding and ulceration. **Since there have been no controlled trials to demonstrate whether or not there is any beneficial effect or harmful interaction with the use of Zorprin in conjunction with other nonsteroidal anti-inflammatory agents (NSAIs), the combination cannot be recommended (see Drug Interactions).** **Because of its relatively long onset of action, Zorprin is not recommended for antipyresis or for short-term analgesia.** **CONTRAINDICATIONS:** Zorprin should not be used in patients known to be hypersensitive to salicylates or in individuals with the syndrome of nasal polyps, angioedema, bronchospastic reactivity to aspirin, renal or hepatic insufficiency, hypoprothrombinemia or other bleeding disorders. Zorprin is not recommended for children under 12 years of age, it is contraindicated in all children with fever accompanied by dehydration. **WARNINGS:** Zorprin should be used with caution when anticoagulants are prescribed concurrently, since aspirin may depress platelet aggregation and increase bleeding time. Large doses of salicylates may have hypoglycemic action and enhance the effect of the oral hypoglycemics, concomitant use therefore is not recommended. However, if such use is necessary, dosage of the hypoglycemic agent must be reduced. The hypoglycemic action of the salicylates may also necessitate adjustment of the insulin requirements of diabetics. **While salicylates in large doses have a uricosuric effect, smaller amounts may reduce water excretion and increase serum uric acid.** **USE IN PREGNANCY:** Aspirin can harm the fetus when administered to pregnant women. Aspirin interferes with maternal and infant hemostasis and may lengthen the duration of pregnancy and parturition. Aspirin has produced teratogenic effects and increases the incidence of stillbirths and neonatal deaths in animals. **If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.** Aspirin should not be taken during the last 3 months of pregnancy. **PRECAUTIONS:** Appropriate precautions should be taken in prescribing Zorprin for patients who are known to be sensitive to aspirin or salicylates. Particular care should be used when prescribing this medication for patients with erosive gastritis, peptic ulcer, mild diabetes or gout. As with all salicylate drugs, caution should be exercised in prescribing Zorprin for those patients with bleeding tendencies or those on anticoagulants. **In order to avoid exacerbation of disease or adrenal insufficiency, patients who have been on prolonged corticosteroid therapy should have their therapy tapered slowly rather than discontinued abruptly when Zorprin is made a part of the treatment program.** **Patients receiving large doses of aspirin and/or prolonged therapy may develop mild salicylate intoxication (salicylism) that may be reversed by dosage reduction.** Salicylates can produce changes in thyroid function tests. **Salicylates should be used with caution in patients with severe hepatic damage, preexisting hypoprothrombinemia, Vitamin K deficiency and in those undergoing surgery.** **Since aspirin release from Zorprin is pH dependent, it may change in those conditions where the gastric pH has been increased as a result of antacids, gastric secretion inhibitors or surgical procedures.** **Drug Interactions:** (See **WARNINGS**) Aspirin may interfere with some anticoagulant and antidiabetic drugs. Drugs which lower serum uric acid by increasing uric acid excretion (uricosurics) may be antagonized by the concomitant use of aspirin, particularly in doses less than 2.0 grams/day. Nonsteroidal anti-inflammatory drugs may be competitively displaced from their albumin binding sites by aspirin. This effect may negate the clinical efficacy of both drugs. Also, the gastrointestinal inflammatory potential of nonsteroidal anti-inflammatory drugs may be potentiated by aspirin. The combination of alcohol and aspirin may increase the risk of gastrointestinal bleeding. **Aspirin may enhance the activity of methotrexate and increase its toxicity.** **Sodium excretion produced by spironolactone may be decreased in the presence of salicylates.** Concomitant administration of other anti-inflammatory drugs may increase the risk of gastrointestinal ulceration. Urinary alkalinizers decrease aspirin's effectiveness by increasing the rate of salicylate renal excretion. Phenobarbital decreases aspirin's effectiveness by enzyme induction. **Pregnancy Category D.** See **WARNINGS** Section. **Nursing Mothers:** Salicylates have been detected in the breast milk of nursing mothers. Because of the potential for serious adverse reactions from aspirin in nursing infants, a decision should be made whether to discontinue nursing or discontinue the drug, taking into account the benefit of the drug to the mother. **ADVERSE REACTIONS: Hematologic:** Aspirin interferes with hemostasis. Patients with a history of blood coagulation defects or receiving anti-coagulant drugs or with severe anemia should avoid Zorprin. Aspirin used chronically may cause a persistent iron deficiency anemia. **Gastrointestinal:** Aspirin may potentiate peptic ulcer, and cause stomach distress or heartburn. Aspirin can cause an increase in occult bleeding and in some patients massive gastrointestinal bleeding. However, the greatest release of active drug from Zorprin is designed to occur in the small intestine over a period of time. This has resulted in fewer symptomatic gastrointestinal side effects. **Allergic:** Allergic and anaphylactic reactions have been noted when hypersensitive individuals have taken aspirin. Fatal anaphylactic shock, while not common, has been reported. **Respiratory:** Aspirin intolerance, manifested by exacerbations of bronchospasm and rhinitis, may occur in patients with a history of nasal polyps, asthma, or rhinitis. The mechanism of this intolerance is unknown but may be the result of aspirin-induced shunting of prostaglandin synthesis to the lipoxygenase pathway and the liberation of leukotrienes, e.g. slow-reacting substance of anaphylaxis. **Dermatologic:** Hives, rashes, and angioedema may occur, especially in patients suffering from chronic urticaria. **Central Nervous System:** Taken in overdoses, aspirin provides stimulation which may be manifested by tinnitus. Following initial stimulation, depression of the central nervous system may be noted. **Renal:** Aspirin rarely may aggravate chronic kidney disease. **Hepatic:** High doses of aspirin have been reported to produce reversible hepatic dysfunction. **OVERDOSAGE:** Overdosage, if it occurs, would produce the usual symptoms of salicylism: tinnitus, vertigo, headache, confusion, drowsiness, sweating, hyperventilation, vomiting or diarrhea. Plasma salicylate levels in adults may range from 50 to 80 mg/dl in the mildly intoxicated patient to 110 to 160* mg/dl in the severely intoxicated patient. An arterial blood pH of 7.1 may indicate serious poisoning. The clearance of salicylates in children is much slower than adults and should receive due consideration when aspirin overdoses occur in infants, salicylate half-lives of 30 hours have been reported in infants 4-8 months old. Treatment for mild intoxication should include emptying the stomach with an emetic, or gastric lavage with 5% sodium bicarbonate. Individuals suffering from severe intoxication should, in addition, have forced diuresis by intravenous infusions of sodium bicarbonate and dextrose or sodium lactate. In extreme cases, hemodialysis or peritoneal dialysis may be required. (*A plasma salicylate level of 160 mg/dl in an adult is usually considered lethal.) **DOSEAGE & ADMINISTRATION:** *In order to achieve a zero-order release, the tablets of Zorprin should be swallowed intact.* **Breaking the tablets or disrupting the structure will alter the release profile of the drug.** **It is recommended that Zorprin be taken with sufficient quantities of fluids (8 oz. or more).** **Adult Dosage:** For mild to moderate pain associated with rheumatoid arthritis and osteoarthritis, the recommended initial dose of Zorprin is 1600 mg (2-800 mg tablets) twice a day. Because of Zorprin's prolonged release of aspirin into the bloodstream, Zorprin tablets may be taken as a b.i.d. dose. Further adjustment of the dosage should be determined by the physician, based upon the patient's response and needs. Since it will take 4-6 days to reach steady-state levels of salicylic acid with Zorprin, it is recommended dosages be given for at least one week before further adjustment. In general, patients with rheumatoid arthritis seem to require higher doses of Zorprin than do patients with osteoarthritis. **Zorprin is not recommended for children below the age of 12.** **HOW SUPPLIED: Zorprin Tablets 800 mg:** plain, white capsule-shaped tablets. **Bottles of 100 Tablets - NDC 0524-0057-01.** **Caution:** Federal law prohibits dispensing without prescription. **U.S. Patent No. 4,308,251** **Manufactured and Distributed by: BOOTS PHARMACEUTICALS, INC., Shreveport, Louisiana 71106 U.S.A.**

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William E. Jacott, M.D.
Candidate for Re-election



(L to R) Douglas Shaw, MMA Chief Executive Officer; William E. Jacott, M.D., AMA Delegate, and Delwin K. Ohrt, M.D., Chairman of the MMA Board of Trustees.

William E. Jacott, M.D., Duluth, is seeking re-election to the AMA Council on Medical Education at the June meeting of the AMA House of Delegates.

Recently elected vice chairman of the Council, Dr. Jacott also chairs the Council's Legislation Committee and represents the AMA on the Accreditation Council for Continuing Medical Education.

A current member and a past president of the Minnesota State Board of Medical Examiners, he is a member of the board of directors of the Federation of State Medical Examiners.

Dr. Jacott has served on the Minnesota AMA delegation since 1975.

The campaign chairman is James F. Knapp, M.D., of Detroit Lakes. The campaign committee is currently seeking contributions and organizing the campaign to return Dr. Jacott to the AMA Council on Medical Education.

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The Ergonovine Test in Patients with Myocardial Infarction without Occlusive Coronary Artery Disease

GAIL B. TURNER, M.D.,* ROBERT A. VAN TASSEL, M.D.,* HANS R. BAUR, M.D.,*
JAMES A. DANIEL, M.D.* and FREDARICK L. GOBEL, M.D.*

In order to evaluate the role of coronary artery spasm in the production of acute myocardial infarction in patients without occlusive coronary artery disease, ten men and six women, ages 19 to 70 years, with documented acute myocardial infarction were subsequently challenged with ergonovine maleate. Following the demonstration of either normal coronary arteries (ten patients) or minimal coronary artery disease ($\leq 25\%$ obstruction of one coronary artery in five patients, $< 45\%$ obstruction of one coronary artery in one patient), ergonovine maleate was given intravenously in divided doses until either chest pain occurred or a total dose of 0.2 to 0.6 mg had been given. Following ergonovine, focal arterial spasm and chest pain occurred in only two patients and no patient showed electrocardiographic changes.

Therefore, most patients with previous acute myocardial infarction without occlusive coronary artery disease had negative ergonovine maleate tests. This suggests that coronary artery spasm probably did not play an important role in provoking acute myocardial infarction in these patients.

THE FACTORS LEADING to myocardial infarction in patients with normal or nearly normal coronary arteries are not clearly defined. In some patients coronary artery spasm may result in sufficient obstruction to cause myocardial necrosis. Ergonovine maleate characteristically provokes coronary artery spasm in the variant angina syndrome. There is need for information regarding the results of such testing in patients with myocardial infarction and either normal or minimally obstructed coronary arteries.

Coronary artery spasm has long been recognized as a cause or contributing factor to ischemic chest pain.¹ Recently coronary artery spasm has been demonstrated to contribute to coronary artery obstruction in some patients suffering from acute myocardial infarction.²⁻⁴ The mechanical provocation of coronary artery spasm has been suspected to result in myocardial infarction.⁵ Coronary artery spasm may be a factor contributing to the occurrence of sudden death.⁶

Intravenous ergonovine maleate has been used to reproduce chest pain typical of angina pectoris and focal coronary artery spasm in susceptible individuals.⁷⁻⁹

This study was designed to evaluate the effect of an ergonovine maleate challenge in patients who have

suffered myocardial infarction but whose arteriograms reveal either normal coronary arteries or minimal obstruction.

Methods

Sixteen patients with previous myocardial infarction were found to have normal or minimally obstructed coronary arteries at coronary arteriography. These patients were subsequently challenged with intravenous ergonovine maleate (Table 1). This was a subset of 115 consecutive ergonovine tests performed during a 37 month period from September 1, 1977 to September 30, 1980.

There were ten men and six women ages 19 to 70 years (mean age 40). Four were smokers at the time of the ergonovine maleate challenge; four had stopped smoking two to 26 years earlier. A family history of either myocardial infarction or death from cardiovascular disease in close relatives before the age of 50 was present in six patients (Pts. 1, 4, 7, 9, 10 and 15). Seven patients were mildly hypertensive (Pts. 2, 4, 8, 9, 12, 14, and 16), and four of these were receiving propranolol therapy, and three were receiving a thiazide diuretic.

Myocardial infarction was documented in each case (Table 1) by electrocardiographic and cardiac enzyme changes. Eight patients developed new Q waves in the electrocardiogram (ECG). (Table 1).

Patients were admitted for coronary arteriography with a mode of one to three months following the

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Address for Reprints: Fredarick L. Gobel, M.D., 2545 Chicago Avenue, Suite 710;
Minneapolis, Minnesota 55404 U.S.A.

episode of myocardial infarction (Table 2). Two patients were studied within one to two weeks of acute infarction (Pts. 13 and 16). At that time, fasting blood glucose and lipid studies were performed. Following routine coronary arteriography intravenous ergonovine maleate was given in divided doses to a total of 0.2 to 0.6 mg. Nitroglycerin sublingually and/or intra-arterially was used at termination of the study.

The arteriographic response was measured independently by three viewers and in no instance was there a major disagreement. A positive response in-

dicative of coronary artery spasm was judged to be a 70% or greater reduction in the transverse diameter of the coronary lumen in at least one view which developed with ergonovine maleate and was then reversed by nitroglycerin and which was associated with reproduction of chest pain and/or ECG changes.

Results

Coronary arteriography (Table 2) revealed normal coronary arteries in ten patients, five had minimal wall irregularity or a lesion obstructing less than 25%, and one patient had a lesion obstructing about 40% of the transverse diameter.

TABLE 1
Clinical and Laboratory Findings in Patients with Myocardial Infarction

Pt. No.	Age (yrs.)	Sex	Smoking History	New Q Waves on ECG	CK-MB peak (>upper limits nl)	CK peak (Factor/upper limits nl)	SGOT peak (Factor/upper limits nl)	LDH isoenzymes (Factor/upper limits nl)	LDH ₁ ≥ LDH ₂
1	28	M	S	+	+	7.9	5.6	2.7	+
2	43	M	SE	+	+	1.4	1.9	.8	-
3	19	M	O	-	+	3.4	3.0	1.5	+
4	36	F	S	-	+	2.8	.9	.9	+
5	40	M	SE	-	-	3.1	3.2	1.7	+
6	70	F	Q	-	-	4.6	4.6	2.0	A
7	31	M	S	+	+	6.0	3.3	.8	A
8	36	M	O	-	+	1.8	1.1	.9	A
9	41	M	S	+	A	>2.8	5.4	2.1	A
10	41	M	Q	-	+	6.4	5.0	A	A
11	27	M	SE	+	+	101.0	12.0	6.2	+
12	59	F	O	+	+	5.6	5.4	2.3	-
13	26	M	Q	+	+	2.9	1.5	1.4	+
14	42	F	SE	+	+	17.3	9.1	3.7	+
15	45	F	Q	-	+	2.2	1.9	1.8	+
16	54	F	Q	-	+	4.5	2.3	1.6	+

M ± SD 40 ± 13

E = smoker at the time of ergonovine testing; O = never smoked; Q = quit smoking at least 2 years prior to ergonovine testing; S = smoker at the time of myocardial infarction.

+ = present, - = negative or absent, A = absent data

TABLE 2
Results of Laboratory Studies

Pt. No.	Wall Motion Abnormalities	Presence of CAD	Response to Ergonovine	Total Dose of Ergonovine (mg)	Mitral Valve Prolapse
1	+,T	LAD-1	0	0.2	0
2	+	LAD-1	0	0.5	0
3	0	0	0	0.5	0
4	0	LCx-2	0	0.5	EV
5	0	0	0	0.5	0
6	+	0	0	0.2	CEVR
7	0	0	0	0.5	0
8	0	0	0	0.2	0
9	+	RCA-1	0	0.6	V
10	0	0	0	0.5	0
11	+,T	LAD-1	+ LAD	0.5	EV
12	+,T	LAD-1	0	0.4	0
13	0	0	0	0.5	EV
14	+	LCx - MB	+ RCA	0.2	0
15	+	0	0	0.3	EV
16	+	0	0	0.4	V

+ = present, 0 = absent, T = thrombus present on 2D-echo or angiography, LAD = left anterior descending, LCx = left circumflex artery, RCA = right coronary artery, MB = myocardial bridge, 0 = no abnormality, 1 = mild wall irregularity or minimal obstruction < 25% of transverse lumen diameter, 2 = mild obstruction of lumen diameter 25 to 50%. 0 = no focal spasm, + = positive focal spasm, V = MVP on ventriculogram, R = mitral regurgitation on ventriculogram, E = echocardiographic evidence of MVP, C = systolic click on auscultation.

Left ventricular angiography showed evidence of definite left ventricular wall motion abnormalities in nine patients (Table 2). Seven such patients had evidence of dysfunction of the anterior or apical wall of the left ventricle, *two* of whom had anteroapical aneurysms with thrombus formation, and one of whom had transient thrombus formation immediately post-infarction. Inferior hypokinesis or akinesis was present in four patients. Seven patients showed normal ventricular function.

After ergonovine maleate, two patients had a positive response. Neither patient had associated electrocardiographic changes. Patient 11, a 27-year-old man, gave a history of nausea, epigastric discomfort, diaphoresis and shortness of breath after playing hockey, following by sudden loss of consciousness associated with ventricular fibrillation and subsequently, a striking rise in serum enzymes (Table 1). A minimal lesion (20%) was present in the LAD which increased to a severe lesion (70%) with ergonovine maleate and was accompanied by mild burning in the chest. An exercise stress test performed subsequently revealed normal exercise tolerance and no chest pain at a heart rate of 178 beats/minute. The patient has continued to have occasional symptoms of chest pain.

The other positive responder, patient 14, a 42-year-old woman with a prior inferior myocardial infarction, experienced increasing episodes of chest heaviness and arm numbness at rest, relieved by nitroglycerin and isosorbide dinitrate. Coronary arteriography revealed normal coronary arteries with an incidental myocardial bridge over the left circumflex artery which narrowed the lumen by 20% during systole. After 0.2 mg of ergonovine, the RCA lumen narrowed by 78% and this was associated with chest pain. The electrocardiogram did not change.

Although generalized coronary artery narrowing of some degree occurred in all patients, in the remaining fourteen patients no focal obstruction was noted; however, five of these fourteen patients developed mild chest discomfort. Six patients developed transient nausea, and two patients experienced epigastric discomfort after ergonovine maleate testing. No serious complication occurred.

Five patients had a history of intense emotion or exertion associated with myocardial infarction. In patient 10, a 41-year-old man, the episode of myocardial infarction was associated with extreme anger after an argument with a police officer. In patient 16, a 54-year-old woman, myocardial infarction was associated with extreme fright following a personal assault. In patient 1, a 28-year-old man, myocardial

infarction occurred while swimming. While in patient 9, a 41-year-old man, it was associated with dragging a fire hose away from a burning building. In patient 11, a 27-year-old man, it occurred after playing hockey. In the remaining 11 patients no unusual activity or emotion was associated with the occurrence of myocardial infarction. Patients 9, 11, and 12 had episodes of ventricular arrhythmias with secondary hypotension which may have been a factor in myocardial infarction in these patients. Patient 9, a 41-year-old man, developed ventricular tachycardia and hypotension requiring DC cardioversion two hours after hospitalization for chest pain while fighting a fire. Patient 11, a 27-year-old man, had sudden out-of-hospital loss of consciousness associated with ventricular fibrillation after playing hockey. Patient 12, a 59-year-old woman, developed the sudden onset of chest and left arm pain followed shortly thereafter by ventricular fibrillation and hypotension requiring DC cardioversion. An area of anteroapical akinesis was noted on the left ventriculogram and a small apical thrombus was demonstrated by two-dimensional echocardiography. A mild 25% obstructive lesion was noted in the mid portion of the LAD coronary artery which did not change following ergonovine maleate.

One patient (Pt. 1) developed recurrent myocardial infarction. The first episode of anterior myocardial infarction occurred while swimming at the age of 24. He was pain-free for four years but continued smoking two packages of cigarettes per day only to have a recurrence of anterior infarction at the age of 28. An anteroapical aneurysm containing thrombus was demonstrated on the left ventriculogram. He did not develop focal spasm but did note moderate chest and neck pain in response to the ergonovine maleate challenge. The only two patients who have developed recurrent angina following myocardial infarction are those patients demonstrated to have coronary artery spasm on provocation with ergonovine maleate (Pts. 11, 14). No patient has died.

Of the 16 patients, seven had evidence of mild mitral valve prolapse (MVP) on the left ventriculogram (44%), while five of these seven patients also had echocardiographic evidence of MVP, and one of these had a systolic click (Table 2). One patient had mild mitral regurgitation demonstrated on the left ventriculogram. No patient had a murmur suggestive of mitral regurgitation or echocardiographic evidence for enlargement of the left atrium.

Discussion

This study indicates that patients who have myo-

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cardial infarction with either normal or minimally obstructed coronary arteries are likely to have a negative response when subsequently challenged with ergonovine maleate. Possible explanations would include: (1) coronary artery spasm did not play an important role in provoking acute myocardial infarction in the patients studied, (2) a change has occurred in either the coronary arteries or their environment so that they are no longer prone to severe vasoconstriction, (3) the ergonovine test, as performed, was not a sufficiently sensitive test under these conditions, or (4) this group represents a mixture of patients with perhaps a variety of causes for acute myocardial infarction including coronary spasm.

MVP has been suggested as a possible cause of transient ischemic attacks, presumably due to platelet-thrombin embolism from the abnormal mitral valve leaflets.¹⁰ A similar phenomenon has been suggested to relate MVP to myocardial infarction in patients with normal coronary arteries.^{11,12} Small thrombi have been noted on myxomatous valves at autopsy.¹³ Seven of the 16 patients (44%) had MVP demonstrated by left ventriculography, while five of these seven patients had echocardiographic evidence of MVP as well. In each case, prolapse of the valve was mild, one patient had an audible systolic click and mild mitral regurgitation (Pt. 6). None had echocardiographic evidence of enlargement of the left atrium. Thromboembolism from a damaged mitral valve may have played a role in these cases.

Coronary artery thrombosis with subsequent lysis is another possibility. Thrombosis in allegedly previously normal coronary arteries with subsequent myocardial infarction has been reported.¹⁴ It has been postulated that in susceptible patients a small area of endothelial damage may result in platelet aggregation which, in turn, leads to the release of serotonin and other vasoactive substances such as thromboxane A₂. These agents, at the proper time, may lead to the occurrence of localized coronary vasoconstriction, hemostasis, and subsequent thrombus formation which may then lead to acute myocardial infarction. Lysis of such thrombi has been reported to occur in experimental animals,^{15,16} as well as in humans.¹⁷⁻¹⁹ Coronary thrombosis secondary to exogenous estrogen may have played a role in Pt. 12, who was taking esterified estrogens. Acute myocardial infarction with normal coronary arteries and even sudden death²⁰ in young women smokers taking birth control pills has been reported.^{18,21} It is possible that obstruction of the coronary arteries may have occurred from embolization of thrombus from the left atrium or left ventricle with subsequent lysis.^{22,23}

Eight patients were smokers at the time of acute myocardial infarction, while three patients had never smoked cigarettes. Cigarette smoking has been demonstrated to increase platelet adhesiveness which, in turn, may have resulted in occlusion by platelet aggregates or led to coronary artery spasm.²⁴ At the time of ergonovine maleate challenge, four of these eight patients had stopped smoking. Cigarette smoking has been related to myocardial infarction in patients with normal coronary arteries.¹⁶ Recurrent myocardial infarction in patients who continue to smoke has been described and also occurred in Pt. 1 of this study.²⁴ The sudden occurrence of myocardial infarction without preinfarction angina strongly suggests the possibility of a vascular accident, such as thrombosis or thromboembolism.

Unusual emotional circumstances (Pts. 10, 16) or extraordinary exertion (Pts. 1,9,11) surrounded the occurrence of acute myocardial infarction in five patients. In these instances hyperventilation and markedly increased catecholamines may have played a role. Change in pH and pCO₂ has been demonstrated to contribute to coronary artery spasm.²⁵ Catecholamines are known to cause platelet aggregation *in vitro* and to cause occlusion of coronary capillaries and degeneration of sarcomeres when infused into dogs.²⁶ The common occurrence of coronary artery spasm associated with acute myocardial infarction in a recent report suggests the possibility that a change in environment of the coronary artery may render them less susceptible to vasomotion at the time of subsequent study.⁴

It is possible that the ergonovine maleate test, as performed, was not sufficiently sensitive to provoke coronary artery spasm. However, large doses of ergonovine maleate were given in this study (ten out of 14 negative responding patients received ≥ 0.4 mg) when compared to some current recommendations of no larger a dose than 0.2 mg total.^{27,28} Sufficient time elapsed for the occurrence of coronary artery spasm, as diffuse narrowing was noted in all patients, generally reducing the diameter of the lumen by 10-20%.²⁹ This would indicate that the amount and duration of observation following ergonovine maleate were sufficient to result in a pharmacologic effect. On the other hand, if spasm contributed to myocardial infarction in these patients, one might expect them to be more likely to develop spasm. In patients with variant angina, ergonovine maleate challenge has been reported to be both sensitive and specific for the detection of coronary artery spasm.^{1,7,28} If coronary artery vasoconstriction caused myocardial infarction in the patients of this study, one might expect them to

be equally sensitive.²⁸

Coronary spasm may not have played an important role in provoking acute myocardial infarction in 14 of 16 patients studied; on the other hand, an environment conducive to spasm and/or thrombosis in-situ might have been created by hyperventilation, sudden increase in circulating catecholamines and cigarette smoking. Platelet aggregation from endothelial injury, smoking or circulating epinephrine may have resulted in coronary artery spasm with or without thrombus formation.^{26, 30-32} Thromboembolism from an abnormal mitral valve may have occurred. Or, at a later date the environment may have changed sufficiently so that the ergonovine challenge was not sufficiently provocative to uncover the possible role

of coronary artery spasm in the production of myocardial infarction in these patients. This study suggests that the syndrome of acute myocardial infarction without fixed serious coronary obstructive lesions is usually different from the syndrome of variant angina, as judged by the patient's response to ergonovine. It is not likely that coronary artery spasm played an important role in the genesis of myocardial infarction in these patients, and therefore the ergonovine test is not likely to be clinically helpful in such individuals.

Acknowledgment

We would like to acknowledge the help of Dr. Howard B. Burchell and the secretarial assistance of Terri Hanson in the preparation of this manuscript.

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Minnesota Medical Association Annual Meeting
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The Driver with Epilepsy

TERRANCE D. CAPISTRANT, M.D.*

The current policies in Minnesota regarding drivers licensing of persons with epilepsy is reviewed. An appointed committee of the Minnesota Medical Association has been instrumental in formulating this policy and also serves as an appeals board for exceptional cases.

THE PRIVILEGE OF DRIVING a motor vehicle in the United States is taken for granted until a threat is made regarding the loss of that privilege. Epilepsy represents the major category of disease where the physician is called upon to assist the State in determining driving eligibility. Physicians dealing with epileptic patients need current information as to policy and procedure followed by the State in granting such licenses.

Adults who develop seizures and are denied a license to drive may experience limitations affecting their livelihood. To a child entering the mid-teens, denial of an opportunity to obtain a driver's license often compounds the poor self-image of the young person with epilepsy. It becomes the task of the individual State granting driver's licenses through the Commissioner of Public Safety or a similar office to balance the rights of the handicapped with the general safety and welfare of the driving public. Just 27 years ago, only half of the states granted any type of driver's license to persons with epilepsy. In most of these states, such licenses were granted only under the most favorable circumstances, such as multiple years of seizure-free experience. The State of Wisconsin pioneered model driver's license legislation in 1949, based on the increased success of the medical profession in the treatment of epilepsy. Their law contained provisions for granting licenses to patients with epilepsy who demonstrated seizure control for one year and it required re-certification by the treating physician every six months. In addition, provision was made for appeal through a medical review panel for those denied a license. The success of this legislation was shown in a review of the driving records of persons with epilepsy who were given such provisional licenses. This study unexpectedly showed a decreased accident rate among persons with epilepsy

driving legally in Wisconsin as compared to other automobile drivers. It was suggested that this was the result of the fact that drivers with epilepsy use more caution and less alcohol thereby compensating for their handicap.

At this writing, all of the 50 States grant provisional driver's licenses to persons with epilepsy who have achieved "control". There are variations in state to state, however, in what constitutes "control", how licensing is carried out and on what basis exceptions and appeals may be made. In Minnesota, we are fortunate in having established over the past 20 years a strong liaison between the State Department of Public Safety and representatives of the medical profession concerned with epilepsy. Formation of a neurology section of the medical advisory board of the driver's license bureau was originally made at the request of the bureau itself. In 1969 this panel, now known as the Resource Group on Driver's License Review, was formalized as a subcommittee of the Minnesota Medical Association. Its members and chairman are appointed by the Association. Two of the original members of the medical advisory committee continue on the present resource group†. The Resource Group on Driver's License Review has acted primarily to make recommendations to the Department of Public Safety regarding policies and rules governing the issuance of driver's licenses to individuals who have paroxysmal disturbance of consciousness or loss of voluntary control (mostly those with epilepsy). The second purpose of the resource group is to serve as a board of appeals for individuals asking for a variance from the statutory standards when denied a license by the Commissioner of Public Safety. Such appeals consist of statements made by the individual patient, his treating physician and any other such pertinent material. The materials are made available to every member of the advisory committee and the chairman of the committee serves to compile a critique of the individual members' votes and com-

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†Ernest Hammes, M.D. and Lyle French, M.D.

ments and to supply the chief driver evaluator at the Department of Public Safety with a final recommendation as to the issuance of driver's license. The processing of an appeal after reaching the committee generally takes less than two weeks and over 40 such cases have been reviewed in the past year.

The current rules of the Department of Public Safety, Driver and Vehicle Services Division affecting individuals with paroxysmal disturbance of consciousness or loss of voluntary control were published in the State Register November 2, 1981 and are known as Rule 11MCAR 1:4094. These rules have evolved gradually over the past 20 years and reflect our increasing success in treating patients with epilepsy.

"Loss of Consciousness or Voluntary Control"

A. General. This rule applies to all drivers and applicants for driving privileges who suffer from any paroxysmal disturbances of consciousness, including, but not limited to, epilepsy. Any person suffering from recurrent syncope of any cause, as well as any other type of periodic or episodic loss of consciousness or voluntary control is included. This rule applies regardless of whether the driver or applicant has an "aura" or warning of imminent seizure or attack or whether the driver or applicant has only had nocturnal attacks, and no exceptions shall be made for such drivers or applicants.

B. Physician's Report. When the Commissioner had good cause to believe that a driver or applicant suffers from any of the periods of unconsciousness mentioned in "A" above, a physician's report in such form as the Commissioner may prescribe, shall be required within 30 days or within such reasonable time that the person may require to obtain the report from his physician. This report shall include a sworn statement from the driver or applicant as to the date of his last period of unconsciousness.

C. Criteria for Cancellation. If this report is not filed, or, if upon review of the doctor's report the Commissioner finds that the individual has suffered from periods of unconsciousness, with the last episode of unconsciousness occurring within the last 12 months, all driving privileges shall be cancelled under the authority of MS 171.14 and denied authority of MS 171.04⁹. The person shall not be issued any driving privileges until the Commissioner finds that the person is competent to drive safely.

D. Criteria for Reinstatement. For reinstatement the Commissioner shall require a satisfactory doc-

tor's report and a satisfactory sworn statement from the person stating the date of the last period of unconsciousness and that it occurred at least 12 months previously. (. . . and that he is cooperating with treatment).

E. Review of Driver's Condition. Except as otherwise provided below, any driver suffering from medical conditions subject to this rule shall be required to submit an annual physician's statement in the form prescribed by the Commissioner, with respect to his medical history, present situation and the prognosis with respect to the applicant's ability to operate a motor vehicle with safety to himself and others.

1. When the Commissioner has good cause to doubt the stability of the driver's condition, the Commissioner shall require physician's statements every six months, or at such shorter intervals as recommended by the reporting physician.

2. After three successive annual statements indicating no episodes of loss of voluntary control, while off medication, the Commissioner shall require a physician's report every four years, unless the physician recommends more frequent reports.

4. When the physician's statement indicates that an episode of loss of voluntary control resulted from a change or removal of medication on the physician's orders, the Commissioner will not cancel the privilege to drive. However, a physician's statement shall be required every six months until the person has been episode-free for not less than one year.

5. When the physician reports that there has been only one such episode, the procedure shall be as indicated in Paragraph E (4) above.

I would like to emphasize and explain some aspects of these rules. When epilepsy is characterized by recurrent generalized tonic-clonic (grand mal) seizures, the rule is clear. Other less well defined "paroxysmal disturbances of consciousness" or recurrent syncope may be cause for removal of a driver's license and the physician's input here is vital. Narcolepsy was recently deleted as a general category of patients covered by rule "4094" because it was the consensus of the resource group that the treated person with narcolepsy did not constitute the same degree of risk to public safety as did the treated person with epilepsy. When deciding if a patient is covered by this rule, the bottom line should be whether or not the patient experiencing an "attack" would be able at the time of the attack to safely operate a motor vehicle. Rule "4094" applies to periodic or recurrent

loss of consciousness or voluntary control and therefore a single seizure is not cause for cancellation of a license. No exceptions are made in applying Rule "4094" to individuals with attacks preceded by an aura or in patients with exclusively nocturnal attacks.

When a patient feels he represents an exception to the "rule" he may appeal to the chief driver evaluator who in turn will request supporting information from the treating physician. When as physicians, we are called upon to answer such requests, we should keep in mind that our response will be reviewed by a panel of our peers interested in epilepsy and therefore all pertinent medical information is appreciated. Of prime importance is the determination of anti-convulsant blood levels which help demonstrate not only an adequate dose schedule but also patient compliance. Exceptions to the rule in many cases sent for appeal involve instances where seizures occur after a patient's anticonvulsant drugs are stopped or reduced on the recommendation of the attending physician. Most of these patients will have their licenses reinstated after the drug dosage has been returned to previous levels. No exception is made however, if the patient reduces his own medications or when the medical advice is clearly ill-advised.

When the resource group has consistently decided appeals on the basis of well-defined exceptions, such exceptions have become codified into "policies" by the State. There will always be unusual circumstances that will make the appeal process a necessary option. The Minnesota Department of Public Safety and its driver evaluators have always accepted the recommendations of the Resource Group. State driver evaluators have also used the chairman of the Resource Group for advice in processing cases not requiring full committee actions. In the rare instances where judicial appeals have been made the State Attorney General's office has defended the Department of Public Safety's decisions based on the committee's actions in the courts.

Epilepsy voluntarily reported by the patient applying for or renewing a driver's license has been a good policy for our State. A rational policy governing the provisional licensing of epileptic drivers has not resulted in any recognized harm to public welfare. Compulsory physician reporting on the other hand can result in "driving the epileptic underground,"

FOOTNOTE: I would like to acknowledge the helpful advice of Drs. William Karnes and Ernest Hammes in the preparation of this manuscript.

and damaging physician-patient relationships resulting in a group of poorly treated or untreated seizure cases. There are however a group of patients with epilepsy who abuse the freedom inherent in a policy of voluntary reporting of their illness. Such individuals include those who do not report their epilepsy and those who are non-compliant in their treatment. It is therefore important to know in these exceptional instances that we as physicians *may* exercise good judgment in citizenship and report such individuals to the State Commissioner of Public Safety without fear of liability for divulging physician-patient privileged information. The Minnesota law governing this procedure was passed in 1982 and is known as public law 1.17.131:

Subd. 1. Physician's Report on Ability to Operate a Motor Vehicle

A physician who diagnoses in any person a physical or mental condition which in the physician's judgment will significantly impair the person's ability to safely operate a motor vehicle may voluntarily report the driver's name and pertinent information to the commissioner.

The commissioner, upon receiving a report, shall require an examination by such agency as he directs of any licensed driver, to determine competency, physical or mental disability or disease or any other condition.

Subd. 1. Immunity from Liability

No civil or criminal action may be brought against any physician or persons who voluntarily makes a report pursuant to this section. No cause of action may be brought against any physician for not making a report pursuant to this section.

It has been my intention in this article to clarify the existing policies and procedures used by the State in licensing individuals with loss of consciousness. Considerable physician discretion as to the advisability of an individual suffering seizures to drive an automobile exists outside of these policies. The State Department of Public Safety has issued a pamphlet for citizens (our patients) to advise them of these same policies and of their obligations. This pamphlet entitled "Drivers Licensing for People with Epilepsy and Related Disorders" can be obtained by writing or calling the Minnesota Department of Public Safety, Transportation Building, St. Paul, MN 55155. (612-296-6652)

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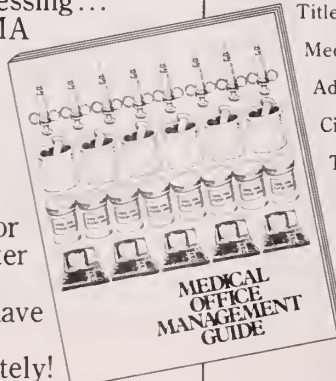
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The Diabetic Dilemma — Medical Mode

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The Highs and Lows of Family Practice

JOHN E. SMITH, M.D.*

WHAT A WONDROUS design is the human body. Imagine a machine adaptable enough to allow an 84-year-old man with a hemoglobin of 3.2 grams to come to the office by himself because his hernia was starting to hurt. Imagine a gadget complex enough to maintain blood sugar at a high enough level to keep the brain functioning and yet avoid the long term complications of hyperglycemia.

With increasing knowledge of diabetes it seems that perfect control of blood sugar is ideal and will prevent, delay, and even reverse the long term vascular complications of the disease. Twenty five years ago when I started in practice the philosophy of control was more modest. In kids, the goal was to assure normal growth. Not even the Joslyn Clinic was trying for normoglycemia. Of the three choices, normoglycemia has always been preferred to hypo or hyperglycemia, but normoglycemia is just a step away from hypoglycemia, and for many diabetics that's too close for comfort.

No one enjoys decreasing sexual function or wants to lose a leg, go into renal failure, or become blind, but most diabetics feel better and certainly have more leeway when their blood sugar is over 150. Over 200 and the polyuria and polydipsia start to interrupt the day, but the acidotic weight loss and polyphagia of uncontrolled diabetes are not all bad. As you try for normoglycemia to prevent long term complications you more frequently have trouble getting the yard work done, or can't finish the jog, or more often need an orange juice fix in the office. As your blood sugar becomes more perfect, your lifestyle becomes more dependent on the disease. As in a bar sign I once saw, "If you drink wine you have the gout. If you don't drink wine the gout has you."

As a new Diabetic, the hardest thing for me to learn was the need to rigidly regiment my life, to do things by the clock, to eat on time whether I was hungry or not. I could no longer skip breakfast, stay at my desk over lunch hour, and then finish the day with a two helping supper. Being a typical compulsive physician, I learned to do it (and even overdo it) when the disease was new. With the passage of time control

became more lax, but as new information came in I would periodically get my act together and overall tended toward ever tighter control. Moving from pills to insulin, to ever larger doses of insulin, to mixing insulins, to split doses of insulin; and from checking urine sugars to checking blood sugars several times a day at home.

One of my jobs as an intern was to inject an insulin overdose in patients with depression. After a suitable period of "treatment" we would inject 50% Dextrose to bring them out of the insulin shock. It seemed to help the depression, but depressed patients get better no matter what you do. It doesn't matter whether they see a physician or one of the proliferating para-professionals. It doesn't matter whether you use drugs or dance therapy or demagoguery; if you can keep people from killing themselves the human organism tends toward equilibrium and starts feeling better. The shock itself caused no long term functional problems, but subsequent autopsies showed a "Swiss-Cheese" brain morphology, and insulin therapy for depression has become a relic of the past.

So it was with patients treated with insulin shock, most got better. Some even reported a feeling of post-shock euphoria and enhanced clarity of thinking, like the cobwebs had been cleared away. The period of shock itself is nothing. You are asleep and unaware. Even the post shock state isn't bad as someone is ministering to you and as you follow directions it gets better and better until you are yourself again. It's the period preceding the shock that is frightening. The confusion, weakness, sweating and inability to think are scary. Especially for one who earns a living with brain power it's worrisome to be unable to organize the simplest information.

The first time it happened to me a load of wood chips had been delivered and I was putting them into a wheelbarrow to dump around the bushes. As my blood sugar fell from the task, I became less and less able to make the simple decisions involved. I realized what was happening, but got stubborn and believed that I could think it through even though my blood sugar was low. I couldn't. My wife finally noticed my wandering around the yard in a disorganized fashion

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and rescued me with a pitcher of orange juice. It has also happened in the office when I couldn't put things together enough to take a blood pressure or to check a knee. I could go through the motions enough to fool the patient, but I would need a glass of juice before I could make enough sense out of the information to be of any help.

As you work toward normoglycemia you not only more frequently experience hypoglycemia, but are getting closer and closer to insulin shock; and therein lies the diabetic dilemma — the perfect control with its inconveniences, restrictions and even dangers, versus a more relaxed control and life style with its possible (probable) long term complications.

With my own diabetic disease, exercise, diet, split insulin coverage and gradually increasing PM insulin dosage prevented daytime hypoglycemia, early morning hyperglycemia, and gradually dropped the glycosolated hemoglobin from 14 to a normal 9 at my last physical. I thought that finally (after 15 years) I was sailing an ideal course between the highs and the lows.

Early in March I had my usual day in the office, felt fine while shopping in the evening, but got a little flaky by bedtime. A blood sugar of 40 convinced me to eat a sandwich. I read for a while and then fell asleep. The next thing I knew it was 5 am, and there were police and paramedics standing around my bed trying to get me to drink some more sugar water. My unusually loud snoring had awakened my wife (and even a son in a downstairs bedroom). When she tried to stop the noise by pushing on me she noted the profuse sweating and made the proper diagnosis. We have some Reactose on hand, but not having needed it for 10 years, we still can't find it. When she couldn't wake me and couldn't get me to drink anything she called 911. The paramedics responded promptly and appropriately. Waking up was like a dream. I couldn't figure out what all the blue uniforms were doing in my bedroom, but the cobwebs gradually cleared. A proforma trip to the hospital and a blood sugar of 70 got me released under my own recognition with a bill for \$44.00.

The experience entitled me to the morning off from work and started me rethinking my whole philosophy of treatment for diabetes. The long term complications of too high versus too low blood sugar seem to me to be about equal, leaving no choice on either side; holes in the brain from too little sugar or blindness, impotence, amputation or renal failure from too much. I do know that hyperglycemia feels a whole lot better than hypoglycemia, and if the choice were only between those two there would be no con-

test. It's the possibility of attaining normoglycemia that makes the choice a three ring circus. Someday increasing technology will invent a transdermal membrane with holes big enough to handle the insulin molecule and with the rate of diffusion across the membrane being dependent on the level of blood sugar.

The experience scared my family. My usual snoring disturbs them more now and makes them wonder. I can feel my wife guarding me in my sleep. The early morning excitement involved only the kids still at home but the whole family was caring and concerned. My daughter-in-law was soft, misty, and sympathetic. My engineer son was analytical. How come? What changed? How do you keep it from happening again? My son, the doctor, asked how come the paramedics didn't use IV Dextrose.

My daughter the dietitian asked about diet changes. The one it seemed to affect the most was my son the poet. He stayed home from work the rest of that day just to make sure I would be all right. He once wrote a song about his father based on a game we played while swimming. All the kids would gang up to try to push me over. He called it, "The Oak Tree." He knew about my diabetes, but never really considered the vulnerability which goes with that diagnosis. He had some modifying to do in his concept of his Dad being like the mighty Oak.

The experience still concerns me because things were going so well until the paramedics entered my consciousness. My enthusiasm for perfect control has been tempered by reinforced knowledge of the fragile nature of diabetic normoglycemia. The wondrous, marvelous, perfect, ever vigilant control of blood sugar that exists for normal people is flawed and imperfect in diabetics. The experience has made me more content with the hyper side of normal and less interested in attaining the perfection of normoglycemia.

My eventual goal is still to become the oldest living past president of the Minnesota Academy of Family Physicians with most of my parts still operative, but the attaining of that goal for diabetics is much like sailing on an inland lake. Very seldom can you set sail and go directly from here to there. Most often you must tack back and forth on each side of the wind; varying between too high and too low, between too much and too little on the way to your goal.

Medical practice also has its highs and its lows, its good days and bad days. Most things don't go perfectly, and if something can go wrong it will, but there are some worse days like a cardiac arrest in the office; or when the baby dies or is deformed. My all

time really worst bad day was when both mother and baby died from an amniotic fluid embolus. Her husband was in the labor room when she gasped and turned blue, so he was not completely unprepared for the news when I had to tell him that we had not only lost, but had lost everything. I was so busy trying to save the mother that when I finally made the decision to abandon her rescue efforts it was too late to save the baby.

Maybe bad times become more firmly etched in the consciousness, but I also remember another young family with three kids the same ages as my own. The father had had a low grade fever for six months when I delivered their last child — an Eric — the same age as our Eric. A month after the delivery an exploratory laparotomy showed the cause of the fever to be a retroperitoneal cancer already metastatic to the liver. That is the only day I can remember cancelling out of the office and going home to pass the football around with my own kids.

Most days in the office are fairly routine mixtures of good and bad, success and failure, pleased patients and unhappy patients. However the day after my experience with the insulin shock was my lifetime — all time — best ever (so far) day in practice. It started with surgery on the 84-year-old with the “hernia” and the 3.2 gram hemoglobin. His hernia turned out to be a carcinoma of the cecum that we thought had grown through the abdominal wall. At surgery we found only a small cancer that had perforated, forming an abscess which had burrowed through like a hernia. The cancer was completely resectable. The huge mass and the abdominal wall swelling were all inflammatory changes.

Naturally the waiting family was pleased with the good news, but in addition to the favorable result, the surgery itself went beautifully. There was a student helping us, so there were plenty of hands. All the needed instruments were ready on the table, and the sponge and the needle counts were right the first time. There were no hitches or glitches, and the atmosphere was relaxed enough to give the surgeon a chance to teach anatomy and gave me a chance to teach techniques of cutting, tying, exposure, and counter-traction, thus making sure that the student learned the importance of a good assistant.

It also gave us a chance to explain “*primum non nocere*,” to quote from Hippocrates, to discuss the history of swedged-on-needles, and to teach the basic ploy of medical gamesmanship, “Try to blame the

patient whenever possible; failing that then blame either the nurse or the anesthetist.” We closed with a final bit of philosophy, “When you are done you should quit.” All in all a very rewarding morning.

By the time I got to the office, the day was too far gone to be tiring, and that day for every patient I not only knew what was wrong but could do something helpful. That day all of the presenting problems were solved to everybody’s satisfaction. Patients all complimented me on our splendid, helpful, capable office staff. They were all pleased at how quickly they had been scheduled and how short was the time in the waiting room. The day was filled with, “thank you, Doctor.” and at least by implication, “I think you’re wonderful Doctor.” I would like to be that good a doctor every day.

After the office there was a Board of Directors meeting for the PPO that is coming along nicely, and then the best part of my day — every day — being home with my wife and family. A special treat that evening was a visit from our new granddaughter. In short, it was a good, good day, even a super day. It was such a good day it makes me wonder if it really happened. Maybe it was my natural enthusiasm or even my imagination coupled with the normal post-insulin shock euphoria that made the day seem so fine. Isn’t it strange that euphoria is a high when euthyroid is a normal?

Diabetes, life itself, and family practice all seem to be made up of these highs and lows, the good days and the bad, the hypers and the hypos. They are the woof and warp of human existence. The contrast between them is what makes our days interesting and enjoyable. It is what life is all about. As the Angel of the Lord said to the Church of the Laodiceans, “I know thy works; thou art neither cold nor hot. I would that thou were either cold or hot. But because thou art lukewarm and neither cold nor hot, I will spew thee out of my mouth.” The middle of the road choices, the lukewarm support, the sitting on the fence decisions and the opting for normoglycemia are not for me.

Foregone Conclusions

Perfection is illusory
 Eschew Hypoglycemia
 A Little Sweetness is Good for the
 Soul, Body, Blood, and Brain
 Good Days are Better than Bad Days
 Overtreat Only in Moderation

Cover Photo
"Sunset on the Nile"

Dr. Mansur Taufic of Austin took the cover photo while navigating through the land of the pharaohs during a visit to Egypt in 1982. The presence of the omnipotent sun god, Ra, was awesome and inspiring.

Of Lebanese descent, Dr. Taufic, is a native of Brazil. He was a former resident under the late Dr. O.H. Wangenstein, in the Department of Surgery, University of Minnesota. Dr. Taufic practices general surgery in Austin.

The cover photo was taken with an Olympus OM-2, 75-150 mm lens, Ektachrome 64 film.

Seventh Annual Black Hills Seminar

The Seventh Annual Black Hills Seminar on Advances in Clinical Pediatrics — June 20, 21 and 22, 1984, at Sylvan Lake Resort, Custer, South Dakota, sponsored by the Department of Pediatrics and Adolescent Medicine, University of South Dakota School of Medicine. Guest faculty include Drs. Frank Oski, John Scanlon, Dan Levin, Robert Vernier and H. David Wilson. For complete conference information contact:

Lawrence R. Wellman, M.D.
Program Coordinator
USD School of Medicine
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**Innovative Approaches for Addressing the Health Needs
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Contact: Janet Shapiro at 373-9843.

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Contraindications: Concomitant use with other potassium-sparing agents such as spironolactone or amiloride. Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur and has been associated with cardiac irregularities. It is more likely in the severely ill with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids and during concurrent use with amphotericin B or corticosteroids or corticotropin [ACTH]). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Cumulative effects of the drug may develop in patients with impaired renal function. Thiazides should be used with caution in patients with impaired hepatic function. They can precipitate coma in patients with severe liver disease. Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene and leukopenia, thrombocytopenia, agranulocytosis, and aplastic and hemolytic anemia have been reported with thiazides. Thiazides may cause manifestation of latent diabetes mellitus. The effects of oral anticoagulants may be decreased when used concurrently with hydrochlorothiazide; dosage adjustments may be necessary. Clinically insignificant reductions in arterial responsiveness to norepinephrine have been reported. Thiazides have also been shown to increase the paralyzing effect of nondepolarizing muscle relaxants such as tubocurarine. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. Triamterene has been found in renal stones in association with the other usual calculus components. Therefore, Dyazide should be used with caution in patients with histories of stone formation. A few occurrences of acute renal failure have been reported in patients on Dyazide when treated with indomethacin. Therefore, caution is advised in administering nonsteroidal anti-inflammatory agents with Dyazide. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication in hypokalemia, decreasing alkali reserve with possible metabolic acidosis. Dyazide interferes with fluorescent measurement of quinidine. Hypokalemia is uncommon with Dyazide, but should it develop, corrective measures should be taken such as potassium supplementation or increased dietary intake of potassium-rich foods. Corrective measures should be instituted cautiously and serum potassium levels determined. Discontinue corrective measures and Dyazide should laboratory values reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Concurrent use with chlorpropamide may increase the risk of severe hyponatremia. Serum PBI levels may decrease without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. Dyazide should be withdrawn before conducting tests for parathyroid function.

Thiazides may add to or potentiate the action of other antihypertensive drugs.

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth, anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions, nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances, postural hypotension (may be aggravated by alcohol, barbiturates or narcotics), Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and respiratory distress including pneumonitis and pulmonary edema, transient blurred vision, sialadenitis, and vertigo have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual calculus components. Rare incidents of acute interstitial nephritis have been reported. Impotence has been reported in a few patients on Dyazide, although a causal relationship has not been established.

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Chelation Therapy for the Treatment of Atherosclerosis

An Appraisal

PAUL PENTEL, M.D.*, CHARLES JORGENSEN, M.D.†, JAMES SOMERVILLE, M.D.†

ETHYLENEDIAMINETETRAACETIC acid (EDTA) is used in industrial applications and in the laboratory because of its ability to bind (chelate) divalent and trivalent metals. The sodium salt of this compound (Na_2EDTA) with which this report is concerned binds calcium avidly and, when administered to animals or humans, can cause hypocalcemia. Because of this property, Na_2EDTA has been used to treat hypercalcemia. The only current FDA approved uses of Na_2EDTA are for the treatment of hypercalcemia or digitalis toxicity. The calcium salt of EDTA (CaEDTA) can bind metals with a higher affinity than calcium for EDTA (lead, mercury, zinc) and is used clinically to treat heavy metal poisoning. CaEDTA is less toxic than Na_2EDTA because it does not produce hypocalcemia.

The clinical use of Na_2EDTA to treat diseases associated with calcium accumulation in tissues was first suggested in 1955 when repeated doses were anecdotally reported to successfully treat nephrocalcinosis.¹ The authors of this report suggested that Na_2EDTA might also be of benefit in removing the calcium which is a component of atheromatous plaques. A number of authors in the late 1950s and early 1960s reported their favorable experience with the use of Na_2EDTA to treat various manifestations of atherosclerosis. After this initial enthusiasm, however, interest in chelation therapy waned, and few additional reports appeared in the medical literature. Prevailing medical opinion in the 1960s and 1970s was that chelation therapy had not been shown to be an effective treatment for atherosclerosis.^{2,3} The suggested rationale for using Na_2EDTA , removal of calcium from atheromas, has been questioned since calcium is only a minor component of these lesions.⁴ A variety of alternative mechanisms have been offered, including effects on unspecified enzymes due to binding of heavy metals, changes in blood coagu-

lation, and inhibition of vasospasm.

Over the past five years, chelation therapy has enjoyed renewed popularity among a small number of physicians. Courses of chelation therapy for the treatment of atherosclerosis are currently offered by physicians in many parts of the United States, including Minnesota.⁵ Na_2EDTA is generally administered intravenously at a dose of 0.5 to 3 grams in one liter of fluid over a period of three to four hours. A typical course consists of one to three treatments per week for a total of 20 to 40 treatments, although the number and frequency of treatments varies. After several weeks rest, the course is sometimes repeated and some patients receive more than 100 treatments. A variety of drugs (lidocaine, heparin), vitamins and minerals may be added to the intravenous infusion. Oral vitamin and mineral supplementation is common, as is the concurrent use of a low fat, low cholesterol diet.^{6,7}

Efficacy of Chelation Therapy

Available reports of chelation therapy describe the administration of Na_2EDTA to patients with various forms of atherosclerosis, principally angina pectoris. Each of these reports compares patients before and after receiving Na_2EDTA , and none of the studies uses a control group. The following are the larger and most completely described series of patients.

Clarke et al. (1956) reported 20 patients with angina pectoris treated with Na_2EDTA at a dose of 5 grams per treatment administered five days per week for a mean of 35 treatments (range 15 to 60 treatments).⁸ Criteria for angina pectoris are not explicitly described. Nineteen of 20 patients reported subjective improvement in symptoms. Improvement in exercise tolerance is also reported, but the method of testing exercise tolerance is not described. In six patients, abnormal electrocardiograms were reported to revert to normal during or following therapy. One patient in this series died suddenly, and the authors speculate that this could have been due to a calcium embolus to the brain.

The same author, in a 1960 editorial, describes his experience with "several hundred patients" stating

Prepared by the Ad Hoc Committee on Chelation Therapy, Hennepin County Medical Society, Minneapolis.

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that symptomatic relief was obtained in 80% of patients with angina pectoris.⁹ He also mentions that the best results in his experience are obtained in patients with intermittent claudication. No data are presented regarding either type of patient.

Meltzer et al. (1960) reported 10 patients with angina given three to four grams of Na₂EDTA two to four times weekly for a total of 20 treatments.¹⁰ No improvement was noted at the end of the treatments, but two to three months later nine patients noted improvement in symptoms and decreasing use of nitroglycerine. Five of nine patients were felt to have a more normal electrocardiogram, and three patients had a decrease in heart size on chest x-ray.

In 1963, Kitchell et al. reappraised the 10 patients described above, (Meltzer et al.¹⁰) and reported the treatment of an additional 28 patients with angina pectoris.¹¹ Patients again received three to four grams Na₂EDTA two to four times weekly. The total number of treatments ranged from 20 to 95, and the duration of follow up was 1.5 to four years. Of the original 10 patients evaluated five years after initial therapy, five had died of myocardial infarction, three had no change in symptoms, and only two were improved. Of the 28 additional patients in this study, 66% were reported to have increased exercise tolerance three months after the end of their treatments. After 18 months, however, seven had died of myocardial infarction, two were worse, six were unchanged, and 13 were improved. The authors of this study felt that chelation offered no benefit over traditional therapies. It should be noted that these authors attempted a placebo controlled crossover study but were unable to complete this because of the large number of patients dropping out of the study.

More recently, patients with coronary artery disease¹⁹ were studied before and after 20 weekly infusions of Na₂EDTA. Mean left ventricular ejection fraction measure by radionuclide scintigraphy increased after treatment, but the magnitude of this increase (5.8%) was small. No untreated subjects were studied over a similar time period to serve as a control group.

Some studies report a decrease in serum cholesterol after Na₂EDTA therapy.⁶ However, subjects in these studies were placed on a low fat, low cholesterol diet which could account for this observation.

In summary, several reports describe improvement in symptoms due to atherosclerosis following chelation therapy. The study with the longest period of follow up, however, reports no benefit from chelation. All of these reports suffer from flaws in experimental design, such as inadequate description of

patient characteristics, inadequate description of methods used to assess improvement, and a lack of control groups. As a result, it is difficult to draw any conclusion regarding the efficacy of chelation therapy as described in these studies.

Animal Studies

Koen, et al. administered Na₂EDTA or placebo to rats fed an atherogenic diet and found less aortic atherosclerosis in the EDTA treated animals.¹² The dose of Na₂EDTA, however, was 400 mg/kg, 10 times more on a weight basis than is used in humans. Na₂EDTA has also been shown to remove calcium from vascular plaque of blood vessels perfused in vitro with very high concentrations of the drug (5 grams/100 ml.).¹³ The relevance of these observations to the clinical use of Na₂EDTA is unclear.

Toxicity

Fatal and nonfatal renal injury have been reported in patients receiving Na₂EDTA. Renal insufficiency may be accompanied by urinary frequency and urgency, or by other systemic signs of toxicity as discussed below.¹⁴ The urinary sediment may contain red blood cells, white blood cells, epithelial cells and granular or cellular casts. In fatal cases, histologic changes typical of acute tubular necrosis are observed.^{15,16} Although renal injury appears to be dose related and most common in patients receiving greater than 5 grams daily, several fatal cases received only 2 to 3 grams daily.^{16,17} Renal injury with a similar histologic appearance has been demonstrated in rats receiving Na₂EDTA.¹⁵ This injury did not occur at doses of less than 62.5 mg/kg, and it has been suggested on the basis of this study that doses of less than 62.5 mg/kg are also safe in humans. Because of species differences, this assumption may not be valid.

Other toxic effects reported with the administration of Na₂EDTA include: hypocalcemia, loss of digitalis effect, increase in prothrombin time, decreased insulin requirement in diabetics, hypotension, burning at the infusion site, nausea and vomiting, and a histamine-like reaction with sneezing and pruritus.^{18,19} A rash has been reported similar to that seen with pyridoxine or zinc deficiency; supplementation with these two factors to prevent the rash is common. All of these acute side effects of chelation therapy appear to be dose related and uncommon at the doses currently used. Since Na₂EDTA is eliminated almost entirely by renal excretion, its use is not recommended in patients with renal insufficiency.⁵

Chronic toxicity from Na₂EDTA has not been ex-

tensively evaluated. Monitoring of renal function during prolonged therapy is not well documented, and consequences of calcium mobilization such as changes in bone mineralization and parathyroid function have not been studied. Ingestion of Na_2EDTA by female rats during pregnancy causes congenital malformations in offspring which can be prevented by simultaneous administration of zinc.²⁰

Cost of Therapy

The cost of a course of chelation therapy with Na_2EDTA is reported by the American Academy of Medical Preventives to cost \$2,000 to \$3,000.⁴ One practitioner offering this therapy in Minneapolis charges approximately \$1,800 for a course of 30 treatments.

Conclusions

The use of Na_2EDTA to treat atherosclerosis is not supported by the available data. All studies claiming therapeutic benefit are flawed in one or more aspects of experimental design, the most important of which

is the lack of suitable control groups. The clinical use of Na_2EDTA to treat any form of atherosclerosis has no scientific basis and is not an acceptable therapy for this disease.

Acute toxicity from Na_2EDTA can generally be avoided by limiting the dose to less than 3 grams daily, but adverse effects including renal injury have been reported even at lower doses. The long-term safety of chelation therapy has not been adequately evaluated.

EDTA chelation therapy should be regarded as investigational because of a lack of objective evidence of its efficacy and questions regarding its safety. Studies involving the use of Na_2EDTA should be performed by trained investigators using rigorously designed protocols capable of providing useful information. It is inappropriate and misleading for medical practitioners to offer chelation to patients as an "experimental" therapy if the drug is being administered as a routine clinical treatment rather than as part of such a study.

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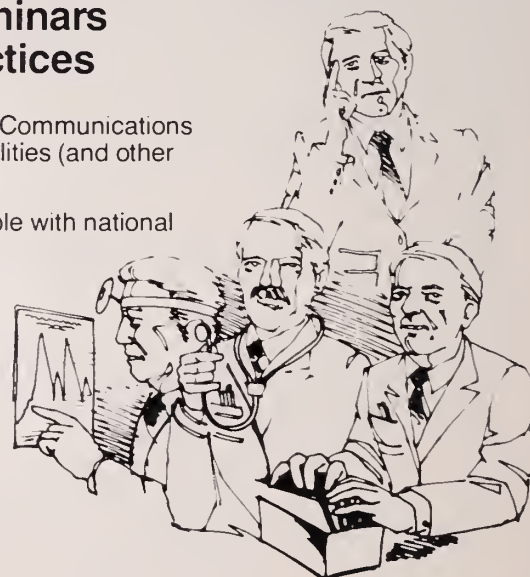
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Scleroderma

VICTORIA L. BECKETT, M.D.*

SCLERODERMA, or progressive systemic sclerosis, is a systemic collagen-vascular disease in which, as P. M. Campbell, et al, described, "the cutaneous features dominate the patient's appearance, but the visceral involvement determines the patient's survival."

In this disease there is small arteriole lumen occlusion and collagen fibrous deposition primarily in the skin, but it also occurs internally in the gastrointestinal tract, lungs, heart, and kidneys. The extent of involvement and the course of involvement are very variable in different individuals. It is the ischemia and the tissue induration and fibrosis in the organs involved that produce the clinical picture.

Patients with extensive skin induration frequently have early internal involvement, hence the term progressive systemic sclerosis, and their prognosis is accordingly grave. Others have a slow relatively confined disease termed CREST (Calcinosis, Raynaud's, Sclerodactyly, Telangiectasia) in which these manifestations may be indolent for long periods of time, and the patient has a chronic, generally limited external involvement.

The earliest manifestation is often Raynaud's phenomena in the fingers, which is hypersensitivity to the cold with fingers becoming white, then bluish and pink as they warm up. At varying periods later, the fingers may become puffy, and the patients have difficulty making a complete fist. The entire hand may be puffy in this mild inflammatory stage, and the condition is often misdiagnosed as rheumatoid arthritis. Although a suspicion may be entertained, a definite diagnosis often cannot be made at this stage.

The puffiness gradually evolves into thickened indurated skin, bound down to structures below. This starts at the fingers and progresses up the arm. At this stage a skin punch biopsy can confirm the diagnosis. Microscopically, a thickened layer of collagen is seen in the dermis with atrophy of the epidermis. In the patient, the thickened skin will show hyperpigmentation as well as spotty depigmentation. The feet and legs may have similar involvement.

The skin of the face and neck thicken, and the face gives a tight appearance with lack of normal skin folds. The nose becomes pinched and the mouth wrinkled and smaller. The diagnosis can be made clinically

at this stage. Sometimes telangiectasia or dilated capillary loops, show as spotty pink dots on fingertips, face, and upper chest. At this early period of disease, even if there is no dysphagia, careful upper gastrointestinal Xray will reveal decreased peristalsis in the lower two-thirds of the esophagus. And even if the patient notes no dyspnea and standard chest Xrays are negative, full standard pulmonary function tests will often reveal an abnormal restrictive pattern with decreased carbon monoxide diffusing capacity and total vital capacity.

From this stage on, if the patient has diffuse disease, slow or rapid progression of symptoms occur with intermittent periods of quiescence. Variable involvement of different organs give different clinical pictures. The American Rheumatism Association diagnostic criteria of scleroderma are: one major criteria, i.e., proximal scleroderma (meaning indurated skin proximal to the metacarpal or metatarsal phalangeal joints), or two of the three minor criteria, i.e., pitted scars on fingertips, sclerodactyly (meaning indurated skin on fingers or toes alone), or pulmonary fibrosis.

The skin induration may progress to involve the entire body; the patients say they feel they are encased in armor. Fingers become contracted, and joints are stiff both because of the tight overlaying skin and from fibrous tendinitis. A characteristic leathery crepitus is heard over involved joints when they are moved. Arthralgias and myalgias occur, but generally the inflammatory features are low-grade. Antinuclear antibody titers may be positive, with a speckled or nucleolar pattern. If mild myopathy is present, creatine phosphokinase may be mildly elevated. Treatment at this juncture is a good physical therapy program of paraffin wax to hands, friction massage of skin, and range of motion exercises of all involved joints.

Raynaud's may become severe and ischemic ulcers on the fingers appear. Later gangrene can occur. Therefore, care of the hands and feet are essential with warm gloves and boots during the winter. Patients must stop smoking to avoid further vasoconstriction. Ulcers must be kept clean, and antibiotic ointments are often helpful. If gangrene occurs, amputation may be necessary.

Visceral involvement, subtle initially, may become

*Mayo Clinic, Rochester, Minnesota.

severe with disease progression. Dysphagia may occur, and later symptoms of a shortened esophagus with stricture. Patients are taught to take small bites and chew carefully, as well as to use antacids on a routine basis. Should stricture occur, esophageal dilatation on an intermittent basis is necessary. If the small bowel becomes similarly involved, symptoms of bloating occur, and later a picture of pseudo-obstruction. Malabsorption symptoms with diarrhea secondary to bacterial overgrowth may also occur. These conditions must be treated with standard symptomatic therapy.

Pulmonary involvement generally proceeds to interstitial fibrosis bilaterally, and patients develop progressive dyspnea on exertion. Crackling rales at lung bases are heard on examination. Careful treatment for chronic pulmonary obstruction is helpful. Pulmonary hypertension can also develop insidiously, and often proceeds to death.

Cardiac involvement often accompanies the later stages of pulmonary disease. Myocardial fibrosis leads to cardiomyopathy. Pericardial effusion is often present. Symptoms of cardiac failure and pleural effusion may then occur.

The most ominous development is that of renal involvement. This is often associated with hypertension and usually occurs within the first three years of disease. The hypertension may be a slowly progressive type, or may present abruptly with malignant hypertensive crises. In this latter case, rapid progression to oliguria and renal failure occurs. Prompt

therapy with diuretics, beta-blockers, vasodilators, and more recently an angiotension-converting enzyme inhibitor, captopril, is necessary to forestall death. If renal failure is not controlled, patients proceed to hemodialysis with its grave prognosis.

The patient's outlook is therefore dependent upon the extent of involvement of the heart, lungs and kidneys. Sometimes, there are overlapping clinical features of systemic lupus erythematosus or polymyositis. These patients may have an antibody directed toward an extractable nuclear antigen (ENA) containing primarily ribonuclear protein (RNP), and the disease is called "mixed connective tissue disease". Generally, these patients evolve into a more typical picture of scleroderma. Treatment is according to the symptoms presented.

In pure scleroderma, corticosteroid therapy is seldom warranted, as the inflammatory features are mild, and it does not affect the fibrotic features. Immunosuppressive drugs equally have not proved helpful, probably for the same reasons. Penicillamine has been reported to be helpful for skin involvement, and may be tried when this aspect of disease is severe. However, generally the best therapy is careful follow-up and treatment of symptoms as they occur.

There is a localized form of scleroderma limited to the skin alone. Single or multiple plaques of thickened skin, or linear atrophic bands may occur on the trunk, extremities or face. This is named "morphea" or "linear scleroderma", respectively. No treatment is effective or necessary.

References

- 1 Campbell PM, LeRoy EC: Pathogenesis of systemic sclerosis: A vascular hypothesis. *Sem Arth Rheum* 4:351, 1975.
- 2 Clinics in Rheumatic Diseases. Progressive Systemic Sclerosis. Edited by G. P. Rodnan Vol. 5. April 1979. W. B. Saunders Co. London, Philadelphia.

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Donnell D. Etzwiler, M.D. and Marilyn Pickard

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Radisson South Hotel

Wednesday, May 9

10:30 a.m. — Hospital Medical Staff Section

Thursday, May 10

7:00 a.m. — MINNPAC ANNUAL MEETING

8:00 a.m. — Exhibits

8:30 a.m. — Scientific Program

8:30 a.m. — Socio-Economic Program

12:00 Noon — Luncheon (Hosted by MINNPAC)

6:30 p.m. — President's Reception and Banquet

Friday, May 11

7:30 a.m. (Tentative) — County Society Caucuses

8:00 a.m. — Exhibits

8:30 a.m. — Scientific Program

9:30 a.m. — House of Delegates

12:00 a.m. — Lunch (with Exhibitors)

12:30 p.m. — Special Society Caucuses

2:00 p.m. — Reference Committees

2:00 p.m. — Practical Management Program

4:30 p.m. — MMIE ANNUAL MEETING

Saturday, May 12

10:00 a.m. — (Tentative) — County Society Caucuses

1:00 p.m. — House of Delegates

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Geriatric Medicine

The Role of the Nursing Home Medical Director

HENRY B. BLUMBERG, M.D.*

The purpose of this paper is to report the findings and conclusions derived from a questionnaire which went to members of The Minnesota Association of Nursing Home Medical Directors (MANHMD) and to administrators of skilled nursing homes who are associated with Minnesota's two nursing home associations.

THE NURSING HOME medical director was initially a concept of the American Geriatrics Society and the American Medical Association. Following the nursing home investigations of the early 1970s, the absence of organized physician involvement in most facilities was identified as part of the problem. In lieu of a physician staff, which the AMA believed impractical in most settings, a physician medical director was considered a reasonable substitute. The two organizations made the recommendation to the Department of HEW that the position be mandated in skilled homes for Medicare-Medicaid approval. This was approved and put into effect in early 1976.

The role was an unknown quantity to most nursing home administrators and, likewise, to most physicians. To define it, the AMA compiled a list of 15 guidelines in 1973. Initially, what role models existed served in a few large institutions, which were not comparable to smaller, far more ubiquitous ones. It may be that the evolution of nursing home medical directors is unique in American medicine. The standardization of physician roles has ordinarily followed their separate establishments in many settings; in contrast, nursing home medical directors all started with the same set of national guidelines.

In 1977, members of the Minnesota Medical Association Resource Group on Aging decided to attempt to organize a state association of medical directors in order to stimulate nursing home physicians to work toward high standards of nursing home patient care. From its incipience, MANHMD has offered full membership to all physicians with an interest in nursing home care, not just to medical directors. Educational seminars have been promoted and liaison with other nursing home professional groups has been stressed.

In 1981, a liaison committee consisting of MANHMD members and representatives of Minnesota's

two nursing home associations was established. Its first assignment was to undertake to determine what duties medical directors in the state were actually performing. A questionnaire was sent to: (1) Medical director members of MANHMD and, at a somewhat later date, to (2) Skilled home administrators of facilities belonging to the nursing home organizations.

Methods

The questionnaire consisted basically of a listing of the 1973 AMA guidelines. Inasmuch as these, in some instances, lumped unrelated functions and, in others, appeared to duplicate one another, some modifications were made. Essentially, each modified guideline constituted a question which the responder was asked to comment on. Three additional questions were appended to provide additional clarification as to medical director relationships with attending physicians, other nursing home personnel, and available and needed forms of educational opportunities. Those sent to administrators also requested specific information respecting the size of the facility, its location relative to a metropolitan area, and the hours of work per month put in by the medical director. Medical director mailings were made in June of 1981 and administrator mailings in July of 1982.

Responses were initially analyzed by a team consisting of a physician member of the liaison committee and a Minnesota Medical Association staff person. Degree of involvement as well as variations in forms of it in each guideline category were evaluated.

The results were then sent to liaison committee members, each of whom was asked to study them and then attend a meeting for the purpose of weighing the significance of the findings. Thereafter, each member was called upon to submit his conclusions in writing. As a final assignment, members were asked to grade guideline functions in terms of how they judged their

*Internist, St. Paul.

ROLE OF NURSING HOME MEDICAL DIRECTOR — BLUMBERG

<p>Nursing Home Administrators June 1982 Attachment (Questionnaire) Page 1</p> <p>I. Facility Information Regarding Your Facility</p> <p>1. Number of licensed beds: SNF <input type="checkbox"/> ICF <input type="checkbox"/> B&C <input type="checkbox"/></p> <p>2. Location of facility: Rural <input type="checkbox"/> Metro <input type="checkbox"/></p> <p>3. Estimate hours worked per month by Medical Director <input type="text"/></p> <p>4. Community involvement in facility? High <input type="checkbox"/> Average <input type="checkbox"/> Minimal <input type="checkbox"/></p> <p>II. Questions Regarding Medical Director Duties. Please state your experience as to the effectiveness of the Medical Director in the stated categories:</p> <p>1. Medical Director assists in arranging continuous physician coverage for medical emergencies and in developing for emergency treatment of patients. Comment: <input type="text"/></p> <p>2. Medical Director participates in development of a system to provide a medical care plan for each patient. Participates in developing written policies governing medical, nursing and related health care services provided in the facility. Comment: <input type="text"/></p>	<p>Nursing Home Administrators June 1982 Attachment (Questionnaire) Page 2</p> <p>3. Medical Director serves as the medical representative of the facility in the community. Comment: <input type="text"/></p> <p>4. Medical Director develops liaison with attending staff physicians to ensure effective medical care. Comment: <input type="text"/></p> <p>5. Medical Director is involved in the organized medical staff or the facility. If there is no organized medical staff, does the Medical Director contemplate a possible substitute? Comment: <input type="text"/></p> <p>6. Medical Director participates in developing and evaluating patient admission and discharge policies. Comment: <input type="text"/></p> <p>7. Medical Director participates in effective program of long-term care review. Comment: <input type="text"/></p>
<p>Nursing Home Administrators June 1982 Attachment (Questionnaire) Page 3</p> <p>8. Medical Director has consultation responsibilities for the overall adequacy of the medical records system. Comment: <input type="text"/></p> <p>9. Medical Director evaluates and recommends regarding the quality of patient care services and adequacy of medical equipment. Able to assess facilities ability to meet the psychosocial, medical needs and physical care requirements and assist administrator and director of nursing. Comment: <input type="text"/></p> <p>10. Medical Director is available and involved in inservice. Comment: <input type="text"/></p> <p>11. Medical Director advises administrator on employee health policies. Comment: <input type="text"/></p> <p>12. Medical Director is knowledgeable concerning programs and policies of allied health agencies which may affect patient care programs for facility. Comment: <input type="text"/></p>	<p>Nursing Home Administrators June 1982 Attachment (Questionnaire) Page 4</p> <p>13. Does the Medical Director monitor and improve care provided by attending physicians effectively? Comment: <input type="text"/></p> <p>14. Does the Medical Director monitor and suggest improvements in care provided by nurses, therapists, and other health care providers? Comment: <input type="text"/></p> <p>15. How would you suggest improvement for the education available for long-term care staff through the Medical Director? Comment: <input type="text"/></p> <p>Thank you for your involvement.</p>

Questionnaire

relative importance. The liaison committee is made up of four administrators and three physicians.

Results

A copy of the submitted questionnaire is presented in the accompanying Table.

In 1981, MANHMD had 64 members and 37 responses were received: a response rate of 58%. A total of 67 responses were received from skilled nursing home administrators. The subjective nature of the responses, as asked for, was, it is believed, much more rewarding informationwise than would have been the case if objective information had been requested. It allowed responders to explain what had taken place with respect to a proposed duty. Grouping of responses did not prove to be unduly difficult, and preponderant trends could be traced with reasonable facility. Some of the specific findings are discussed in the following paragraphs.

Modified question 1 dealt with the medical director's involvement in medical emergency coverage. Responses indicated that attending physicians usually handled this on their own, thereby relieving the medical directors of need to devote their efforts to it.

Modified questions 2 contained two suggested duties, one relating to participation in individual care plan developments; the other to affording help with formulating written policies governing health care services in the facility. Only ten of the responses indicated activity in the first direction, whereas more than 80% of them showed participation in the second. There were indications that time considerations precluded more involvement in the first instance.

Question 3 related to medical director service as a facility representative in the community. Forty percent of both physician and administrator responses indicated such activity. What this consisted of could not be ascertained.

Question 4 related to liaison with attending physicians to ensure effective medical care, but the questionnaire responses generally related to a somewhat different consideration. A major concern of administrators in the past has related to attending physicians' reluctance to make timely patient visits, especially with respect to compliance to regulations. Responses of both medical directors and administrators measured attending physician performance rather than medical director involvement, and both indicated good cooperation in about 80% of facilities. This suggested a need for improvement in some locales.

The question itself might be interpreted to mean a leadership role on the part of medical directors

in aiding attending doctors toward better orientation to the nursing home environment and its problems. Hopefully, medical directors in the future will learn to relate in this manner.

Closely related to the above is question 5, which asks about medical director involvement in organizing a staff. Most directors expressed the belief that this was impossible, as did most administrators. Exceptions included representatives of nursing homes closely affiliated with hospitals. Some members of MANHMD believe that the role of Utilization Review (UR) Committees can be expanded to serve as mini-staffs, and a number of progressive homes have worked in this direction.

Question 6 related to medical director participation in developing and evaluating patient admission and discharge policies, a timely consideration in today's world of burgeoning health care costs. Responses from both administrators and medical directors indicated involvements in reviewing policies only. There was little indication of medical director activity in implementation except in connection with U.R. committees. Nursing home admissions in Minnesota are presently monitored by outside agencies prior to admission.

Question 9 related to the medical director's role relative to a group of responsibilities clearly in the sphere of responsibility of the administrator with the medical director in a consultative capacity. Initially, there was some concern among physicians as to how such might be tactfully accomplished. Many directors stated that they tended to offer advice only when it was asked for, and they seemed uncertain as to how effective they were.

Administrator responses, in a sizable majority of instances, indicated an appreciation for help afforded in the above manner. Where negative answers were given, they consisted of complaints that more consultation was not forthcoming. No response suggested overstepping of prerogatives.

The responses to this question appear to provide clear evidence that, in the instance of the responders, physician input into nursing home decision-making is valuable and needed. Recent political moves designed to replace or eliminate the medical director seem ill-advised.

Discussion

The original AMA guidelines made no attempt to rate medical director functions in terms of their importance, and in the initial stages of assuming such duties, physicians had little help in determining in which directions to allocate their limited time. Ques-

tionnaire analysis determined that the median time per month which medical directors devoted to these duties was only five hours monthly.

Along with the assignment of analyzing questionnaire responses, the liaison committee was asked to approach the task of prioritizing guideline functions in light of the responses. Each member was asked to rate the guidelines in terms of their importance, summarizing in writing the basis for his conclusions.

It was the near-unanimous conclusion of the committee that two of the functions were of primary importance: these being that covered in question 4 (relating to medical director liaison with attending phy-

sicians) and that covered in question 9 (consultations with administrators and other professionals regarding patient care). These were believed to constitute the focal points of medical direction.

Opinions regarding the significance of the remaining guidelines were divided, with their individual relevance probably varying with circumstances. Nursing home medical direction seems, even today, in a formative stage, and efforts directed toward further progress are called for. Physicians interested in working toward these ends are invited to join the Minnesota Association of Nursing Home Medical Directors in its programs.

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

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Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

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4-21 1984 Winter Sportsmedicine Conference; North Central Medical Conference; Sarajevo/Dubrovnik, Yugoslavia; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

8-9 Drug Therapy Symposium; University of Minnesota; Radisson, St. Paul; CONTACT: CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

8-10 Training Workshop in Pulmonary Function Testing; St. Paul-Ramsey Medical Center, St. Paul-Ramsey Medical Center; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

15-18 Recent Advances in Coronary Artery Disease; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

16-17 Current Concepts in Perinatal Medicine; St. Paul-Ramsey Medical Center & U of M Medical School; Radisson Plaza Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

24-25 ENT Problems in Primary Care; University of Minnesota Medical School; Sheraton Ritz Hotel, Minneapolis; CONTACT: Bart W. Galle, Ph.D., Interim Director, U of M CME, Box 293, Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

25 Managing Traumatic Amputation; North Memorial Medical Center; Sheraton Park Place; CONTACT: Molly Kunder, North Memorial Medical Center; 612/520-5455.

March, 1984

2-3 Family Practice Update; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Charles Drage, M.D., 69 West Exchange, St. Paul, MN 55102; 612/291-3180.

3-10 St. John's Hospital Winter Seminar, "Current Concepts of Medicine"; Ramsey County Chapter of the MN Academy of Family Physicians & St. John's Hospital; Vail Village Inn, Vail, Colorado; CONTACT: Mrs. R. J. Sells, 2040 E. Kenwood Drive, St. Paul, MN 55117; 612/776-2110.

6-13 Rheumatology Seminar V; Minnesota Medical Association Resource Group on Rheumatic Diseases; Paradise Grand Hotel, Nassau, Bahamas; CONTACT: Department of CME & Meeting Services, Minnesota Medical Association, Suite 400, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

8-10 Current Concepts in Cardiopulmonary Medicine; St. Paul-Ramsey Medical Center & U of M Medical School; Radisson Plaza Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

9-10 Colon and Rectal Diseases; U of M Medical School; Hyatt Regency Hotel; CONTACT: CME, University of Minnesota, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN; 612/373-8012.

10 Occupational and Environmental Pulmonary Diseases; St. Paul-Ramsey Medical Center & Midwest Center for Occupational Health & Safety & University of Minnesota Medical School; Radisson Plaza, St. Paul; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

12-14 MN Academy of Family Physicians, Spring Refresher; MN Academy of Family Physicians; AMFAC, Minneapolis; CONTACT: Chari Konerza, Executive Director, MN Academy of Family Physicians, Health Associations Center, 2221 University Avenue S.E., Suite 426, Minneapolis, MN 55414; 612/623-9559.

16-17 Seventh Annual Clinical Update in Practical Cardiology; Minneapolis Heart Institute & Abbott-Northwestern Hospital; Educational Building, Abbott-Northwestern Hospital; CONTACT: 612/874-4300.

17-18 Selected Topics in Nutritional Biochemistry; Stewart Seminars, International Academy of Preventive Medicine and NW Academy of Preventive Medicine; Hyatt Regency, Minneapolis; CONTACT: 303/987-2131.

23-24 Obstetrics Update; St. Paul-Ramsey Medical Center & U of M Medical School, The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

April, 1984

2-3 Annual Ophthalmology Specialty Course; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

5-7 Second Annual Interdisciplinary Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza, St. Paul; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

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6-7 Eye Enucleation; U of M Medical School; Jackson Hill, U of M, Minneapolis; CONTACT: Bart W. Galle, Ph.D., Interim Director, CME Office, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

12-13 Medical/Legal Issues in the 80's: Institutional Medical Staff Liability and Effective Medical Expert Testimony; St. Paul Ramsey Medical-Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-14 Eating Disorders Update: Anorexia Nervosa & Bulimia; University of Minnesota; Earle Brown Center, U of M; CONTACT: U of M CME, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

13 Pediatric Challenges — 12th Annual Symposium for Primary Care Physicians; Minneapolis Children's Health Center; Minneapolis Children's Health Center; CONTACT: James Moore, M.D., Indian Health Board 2495 18th Avenue South, Minneapolis, MN 55404; 612/721-7425.

14 Minnesota Society of Clinical Pathologists Spring Meeting; ASCP; Marriott Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director of Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., #400, Minneapolis, MN 55414; 612/378-1875.

14 Problems in Cardiovascular; The Duluth Clinic, Ltd.; St. Mary's Hospital Auditorium; CONTACT: James Brueggemann, M.D., The Duluth Clinic, 400 E. Third Street, Duluth, MN 55805; 218/722-8364.

23-27 Family Practice Review: Update 1984; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293, Mayo Memorial, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

26-27 Pediatric Days; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085

27-28 Ophthalmic Reviews; Mayo Clinic Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

April 30-May 4 Practice of Internal Medicine — 1984; Mayo Clinic/Mayo Foundation; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

May 1984

1-12 Minnesota Medical Association, Annual Meeting; MMA; Radson South Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director, Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

10-12 42nd Annual Course in Allergy and Clinical Immunology; ME Office U of M Medical School; Mayo Memorial Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office, Box 193 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

1 ENT Primary Care: A Workshop; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Dr. Charles Drage, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3180.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

17-18 Radiology Update; St. Paul Ramsey Medical Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

17-19 Topics and Advances in Pediatrics; Office of CME U of M Medical School; Mayo Memorial, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

21-23 Bone and Soft Tissue Tumors; American Academy of Orthopaedic Surgeons; Kahler Hotel, Rochester; CONTACT: 312/822-0970.

22 Gynecologic Oncology Update, Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012

23-25 Current Concepts in Radiation Therapy; Office of CME, U of M Medical School; Mayo Memorial Auditorium; U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

May 30 — June 1 Recent Advances in Laboratory Medicine; Office of CME, U of M Medical School; Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

June 1984

7-8 Clinical Nutrition for Practicing Physicians; St. Paul Ramsey Medical Center; The St. Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

14-16 Management of Pelvic Trauma; American Academy of Orthopaedic Surgeons; AMFAC Hotel, Minneapolis; CONTACT: 312/822-0970.

20-21 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

27-29 Real Time Ultrasound in Obstetrics; U of M Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D. Interim Director, CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

July 27 — August 13 Summer Sportsmedicine Conference; North Central Medical Conference; Los Angeles, California; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge \$10.00, key number, \$2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

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Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

IDEAL PRACTICE OPPORTUNITIES for an Orthopedic Surgeon, an Obstetrician/Gynecologist, a Pediatrician and a General Surgeon in a community of 17,000 just 40 miles south of Minneapolis/St. Paul. Modern, well-equipped 99 bed hospital serving a 30,000 population base. Physician survey confirms needs. Varied cultural, educational and recreational opportunities within short distance. Contact Physicians Search Committee, District One Hospital, 631 S.E. First Street, Faribault, Minnesota 55021 or call 1-507-334-6451.

FAMILY PRACTITIONER — Join an active practice in Northern Minnesota. Two young F.P.'s are looking for one or two associates to replace retiring partner. Attractive clinic and 44 bed hospital in a friendly town of 2000. Contact W. Ofstedal, M.D., 218-435-1212, Fosston, Minnesota 56542.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

LAND FOR SALE: 40, 80, 140 acre parcels in Carlton County. Road access, high land, wooded, \$200 to \$300 per acre. Write Charlie Gronquist, M.D., 1210 Wilson Avenue, Cloquet, MN 55720, or call at 218-879-4813.

FAMILY PHYSICIAN needed to join a Multispecialty Group in a growing area of Minnesota. The Group is young and progressive and provides a great opportunity to a Board-Certified Family Practitioner. A large hospital utilized for the hospitalization of patients with back up of specialists. The call schedule will allow you the opportunity to enjoy the cultural and recreational activities which are abundant in this area of Minnesota. Salary and fringe benefits are open and negotiable. If interested, please send your curriculum vitae to Minnesota Medicine (736), 2221 University Avenue SE, #400, Minneapolis 55414.

NEEDED IMMEDIATELY, physicians for General Practice, Internal Medicine specialists and pediatrician for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D. or Noel Collis M.D. at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

FAMILY PRACTICE. Outstanding opportunity for BE/BC F.P. with dynamic, young group practice. Located in exceptionally clean and safe city of 175,000; home of state capitol and university. Full fringes; salary commensurate with experience. Send inquiry and resume to: Dr. Kongstvedt, Health Central, 17th and "N", Lincoln, Nebraska 68508. Phone (402) 475-7000.

Classified Advertisements

INTERNIST-CARDIOLOGIST AND NEUROLOGIST — specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

THE BEMIDJI CLINIC is a 20 doctor multi-specialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary & fringe benefits offered. Currently recruiting for Board Certified Family Physician and Internist, preferably with subspecialty training. Contact D. E. Carlson at (218) 751-1280, Bemidji, MN (218) 243-3139 (Home)

POSITIONS AVAILABLE . . . For qualified physicians in Divisions of Family Practice and Psychiatry — Fergus Falls State Hospital — located in the Heart of Minnesota's 10,000 Lakes, Fergus Falls is a progressive community and provides an excellent health care setting. Consultant staff presently includes 9 family practitioners, 7 psychiatrists, a neurologist, physiatrist, pediatrician, 2 pathologists, and a surgeon — licensed for 206 chemically dependent patients, 135 mentally ill patients, and 256 mentally retarded residents, Fergus Falls State Hospital provides the only adolescent drug and dependency treatment program in the state system. For more information contact — Richard C. Baker, M.D., Medical Director, Fergus Falls State Hospital, Box 157, Fergus Falls, MN 56537 (218) 739-7396.

GENERAL INTERNIST — BC/BE needed immediately to join a ten member multi-specialty group in Southern Minnesota. Fairmont is a progressive city of 13,000 with excellent schools and recreational areas around a chain of five lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact Donald Grangenett, Fairmont Medical Clinic, P.A., Fairmont, Minnesota 56031. (507) 238-4263.

U.S. AIR FORCE MEDICAL CORPS Currently is accepting applications for physicians in the following specialties: Surgery (All Specialties), Obstetrics/Gynecology, Otorhinolaryngology, Anesthesiology, Psychiatry, Orthopedic Surgery. For further information call collect: Lt. Roger Kalonick 612-331-8216.

ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

IMMEDIATE OPENING for primary care physician. Internal Medicine. Midway area of Saint Paul. Contact David Klevan, M.D. at 612-645-0711. 451 North Dunlap, Saint Paul, MN 55104.

FOR SALE: Family practice, office and equipment. Small southern Minnesota town. Reasonable, terms negotiable. Hospital, cooperative colleagues, excellent community. Call 612-388-7584 evenings.

ENJOY THE NORTHWOODS! Need an aggressive, hard-working Internal Medicine Specialist and a Family Practice Specialist to join a brand new clinic in Eagle River, Wisconsin. Great income potential and outstanding fringe benefit packages available. For further information call collect (715) 842-3202, or write to Administrator, 2409 N. 13th, Wausau, Wisconsin 54401.

PHYSICIAN DESIRES TWO (2) other Doctors to share large office, downtown Minneapolis. Approx. monthly rent, utilities, phone, etc. would be \$700-800. Call: 612-870-8448.

1984 CME CRUISE/CONFERENCES ON LEGAL-MEDICAL ISSUES — Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. 7-14 days in Winter, Spring, Summer. Approved for 18-24 CME Cat. 1 credits (AMA/PRA). Distinguished professors. **FLY ROUNDTRIP FREE ON CARIBBEAN, MEXICAN, & ALASKAN CRUISES.** Excellent group fares on finest ships. Registration limited. Prescheduled in compliance with present IRS requirements. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

(Continued on page 118)

Classified Advertisements

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LAKE HOME FOR RENT. On Horseshoe Lake, near Turtle Lake, Wisconsin. Available June 1, 1984. **Unit A:** Large living room with stone fireplace. Bedroom with Ben Franklin stove. Full bath and kitchen. Sleeps two to four. \$425/week. **Unit B:** Newly constructed. First level; Lounge (with Ben Franklin stove) leading to patio over-looking lake. Bedroom, full bath and kitchen, dining area. Second Level; 3 bedrooms, half bath. Sleeps six to eight. \$675/week. Hot water heat. Gruman canoe and/or Lund fishing boat. Please call for additional information and reservations. M. A. Cornwall, M.D. (612) 735-1513.

GENERAL PEDIATRICIAN: Assume active pediatric practice in 18 member multi-specialty clinic. Contact Mr. Robert Vogel, Administrator, Bloomington-Lake Clinic, 3017 Bloomington Avenue South, Minneapolis, 55407. Telephone 612-721-6511.

THE DEPARTMENT OF PSYCHIATRY is offering a one year fellowship in alcohol/drug dependence for physicians licensed in the United States who have had at least three and preferably four years of previous training in a primary care field (including psychiatry). Training includes inpatient, outpatient, consultation-liaison, day and evening programs, teaching, administration and research. Send correspondence including resume and three references to Joseph Westermeyer, M.D., Director, Alcohol/Drug Treatment Program, University of Minnesota Hospitals, Box 393 Mayo Memorial Building, Minneapolis, MN 55455. The University of Minnesota is an equal opportunity employer and specifically invites and encourages applications from women and minorities.

FAMILY PHYSICIAN wanted, board certified or eligible, to join two young family physicians in a growing family practice group. New facility. Northfield is a small attractive college town (St. Olaf and Carleton) and is less than one hour from the Twin Cities and Rochester. Contact: Kenneth Sansome, M.D., or David Larson, M.D., Family Physicians of Northfield, 505 W. Woodley, Northfield, MN 55057; (507) 663-1261.

SMALL MEDICAL SUITE (545 square feet) in Abbott Northwestern Medical Office Building available for sub-lease effective February 1, 1984. Contact Dr. Peskay 871-8684.

PSYCHIATRIST Immediate opening for staff psychiatrist at publicly funded Community Mental Health Center serving population of 45,000. Usual outpatient duties with adolescents and adults plus some consultation with area courts, MD, nursing homes, etc. No travel. Center has interdisciplinary staff of 14, including full time psychiatrist; programs include outpatient services, inpatient, EAP, CDOP, Victim Crisis Center, and day care for chronic MI. Salary range \$60-75,000 with excellent benefits including full paid family health insurance, moving allowance, good retirement plan and paid malpractice. Good family town two hours from Minneapolis. Minnesota license required. Please contact Lawrence R. Maier, Ph.D., P.O. Box 396, Austin, MN 55912 or call collect (507) 433-7389. Complete vita and references needed.

FAMILY PRACTICE PHYSICIAN(S). Board Certified/Eligible. Position(s) available for 1-2 family practice physicians on June 1, 1984. Association of specialty physicians will provide newly remodeled medical office facility in very desirable area of city. Generous minimum income, expense and benefit guarantee with no maximum restriction. Opportunity to share call with other community family practitioners. University city with a medical school and a family practice residency. Also quality of life in city with population of 92,000 located on the shores of Lake Superior and close to wilderness and metropolitan areas. Contact Rita D. Hutchens, Director, Duluth Physicians Association, 1210 East First Street, Studio A, Duluth, Minnesota 55805 or (218) 728-6851.

FAMILY PRACTICE PHYSICIANS are being sought for immediate opening in Madison, Minnesota. Practice offers multiple opportunities with experienced medical staff. Financial arrangements negotiable, starting with a guaranteed salary and advancing to partnership if desired. Details may be secured by calling either of the two following individuals collect: Norval M. Westby, M.D. (612) 598-7531 or Richard L. Range, Administrator (612) 598-7556.

EXCELLENT MEDICAL OFFICE SUITE for rent in densely populated area of Maple Grove/Osseo. The site is new construction and is adjacent to a Kindercare Center and elementary school. If interested, call Barthel Construction at (612) 428-4381.

Classified Advertisements

SOUTHERN CALIFORNIA — We are seeking experienced specialists and general practitioners for our facilities in Los Angeles and Orange Counties. Located in close proximity to major teaching centers, we offer the opportunity of continued professional development and rewarding clinical practice in association with 350 full-time physicians. Compensation and benefits are excellent including paid vacation, educational leave, sick leave, and retirement; insurances included are malpractice, life, disability, medical and dental. Send CV to: Professional Placement, INA and Ross Loos Healthplans, 700 N. Brand Blvd., Suite 500, Glendale, CA 91203.

WANTED: Ob-Gyn, family practitioner, pediatrician and internal medicine to join multi-specialty group. One month vacation, hunting, fishing and lake recreation area. Starting salary excellent, many fringe benefits included. Write: MINNESOTA MEDICINE (735), 2221 University Ave. SE, Suite 400, Minneapolis 55414.

GENERAL SURGEON, Board certified or eligible, to join an eight doctor medical center. Located at International Falls, Minnesota. Outdoor paradise with Voyageurs National Park and Wilderness canoe area. Must be qualified to perform general surgery, including orthopedic and GYN procedures. Located 100 miles from Bemidji and 160 miles from Duluth. Known as the "Ice Box of the Nation" but only on weather maps. Contact Dr. George M. Crow or Dr. A. Marc Gorden, 218-283-9431.

STAFF PSYCHIATRIST CMHC has an excellent opportunity for a staff psychiatrist. Must be board eligible. Programs include in-patient, out-patient, education and consultation, specialized services to children, the chronically mentally ill, and the chemically dependent delivered in conjunction with a seasoned team of multi-disciplinary mental health professionals including two part-time psychiatrists. Excellent four-season recreational area. Salary and fringe benefits negotiable. Contact: Donald E. Frees, ACSW, Area Program Director, P.O. Box 646, Bemidji, MN 56601. An Equal Opportunity Employer.

LOCUM TENENS FAMILY PRACTICE opportunity available in northwestern Minnesota for April-August 1984. Spend the spring and summer months in the north and enjoy the benefits of rural living. We will pay well and provide good experience. Contact: Arnold L. Carriere, Administrator, Falls Clinic, P.A., P.O. Box 407, Thief River Falls, Minnesota 56701. Telephone (218) 681-4747.

WANTED: Psychiatrist, full or part-time, and GP. Competitive salary with excellent fringe benefits. Contact: Robert W. Schulz, M.D., Medical Director, Moose Lake State Hospital, Moose Lake, MN 55767.

FAMILY PRACTICE POSITION available with a thirteen physician multi-specialty group in northwestern Minnesota. Prefer physician who can join the group by early spring. We provide an excellent salary guarantee and incentive formula along with a fine benefits package, including relocation costs. The area offers excellent outdoor recreational facilities, close to lake areas and a very progressive community of 10,000 people. Primary medical service area is a population of 30,000-40,000 people. Contact: Arnold L. Carriere, Administrator, Falls Clinic P. A., P. O. Box 407, Thief River Falls, Minnesota 56701. Telephone (218) 681-4747.

PSYCHIATRIST — Consider an employment situation that offers: a competitive salary, a 40 hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center. The city of St. Cloud, Minnesota, and the surrounding area boasts of the high quality of family living that is afforded its residents who enjoy clean air, easy access to a wide variety of four-season outdoor recreational opportunities, excellent educational facilities which include a State University, St. John's University and the College of St. Benedict, and a full range of services available in a metropolitan setting while maintaining the quality of suburban and rural living. St. Cloud is only 75 minutes from Minneapolis/St. Paul metropolitan area. License in any state accepted. Financial assistance to defer cost of relocation. Equal Opportunity Employer. Write: Chief, Psychiatry Service, Veterans Administration Medical Center, St. Cloud, Minnesota 56301, or call (612) 252-1670, Ext. 368.

EMERGENCY PHYSICIANS or primary specialists with ER experience: Full time practice opportunities available beginning January, 1984, in Minneapolis/St. Paul at our newest free-standing emergency centers. Admissions and referrals through a major Minneapolis teaching hospital. Excellent salary with opportunity to advance and join a physician partnership which develops, staffs and manages free-standing emergency centers and hospital E.D.'s nationally. Send CV to: Madeleine Shalowitz, M.D., The Flashner Medical Partnership, The Doctors Emergency Officenters, 830 E. Rand Road, Mt. Prospect, IL. 60056.

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GENERAL SURGEON AND INTERNIST — BC/BE needed immediately to join 10-member Southern Minnesota multi-specialty group. Fairmont is progressive city of 13,000 with excellent schools and recreation around chain of 5 lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact: Donald Grandgenett, Fairmont Medical Clinic, Fairmont, Minnesota 56031, (507) 238-4263.

B. E. FAMILY PRACTITIONER to join 50 specialists at Dakota Clinic. Fargo-Moorhead. Clinic adjacent to 181-bed Dakota Hospital in community of 100,000 people. Salaried 1st year. Group recently merged with Detroit Lakes practice and operates other outreach clinics, including Casselton. Contact: Larry Solberg, Administrator, Dakota Clinic, Ltd. 1702 South University Drive, Fargo, N.D. (701) 280-3300.

FAMILY PRACTICE PHYSICIAN needed by Cook Area Health Services, Inc., Cook, Minnesota. Salary is competitive and negotiable with full-fringe benefit package. Located in the quiet woods and waters of beautiful Lake Vermilion. Call collect: (218) 666-5959 Ext. 38. Write: Cook Area Health Services, Inc. Ashawa Clinic Building, Cook, Minnesota 55723.

FAMILY PRACTICE PHYSICIAN to join Warroad Community Clinic staff of two. The city of Warroad is located on the southwestern shore of beautiful Lake of the Woods. Enjoy exceptional hunting and fishing while living in a thriving rural community. Two hospitals serving the area. First year salary guaranteed. Contact: Scott Batulis, Warroad Community Clinic, Lake Street, Warroad, MN 56763, (218) 386-2160.

POSITIONS WANTED by board eligible Marquette graduate in Emergency or Urgent Care. Would be interested in flexible hospital-based or industrial practice. Prefers the St. Cloud area. Contact: Chris Schearer, M.D., 21965 King Arthur's Court, Brookfield, WI 53005, (414) 784-2272.

FAMILY PRACTITIONER to join two physician practice in the Mille Lacs Lake area of central Minnesota. Progressive communities with excellent schools and numerous activities. Established outreach and referral program. Newly renovated hospital/nursing home facilities. Send C.V. or contact Charles Fazio, M.D., Medical Director, P.O. Box 53, Isle, Minnesota 56342. 612/676-3661.

POSITIONS AVAILABLE — BC or BE radiologists. Training in CT, Ultrasound, General, Nuclear Medicine, Digital Angiography and interventional procedures required for free standing diagnostic centers 8/84. Minneapolis-St. Paul area. Salary commensurate with experience; bonus commensurate with volume. Please forward CV in confidence to: National Health Diagnostic Centers, General Offices, Box 104, 511 11th Avenue South, Minneapolis, MN 55415. No phone calls please.

OBSTETRICIAN/GYNECOLOGISTS, GENERAL SURGEON, INTERNIST — BC/BE, needed immediately by eleven-member practice in Anoka, MN, a north-west suburb of the Twin Cities, with 220-bed hospital, excellent school system, just minutes from downtown Minneapolis. First year salary negotiable. Contact: Richard Moore, Administrator, Mork Clinic, P.A., 1833 2nd Avenue South, Anoka, MN 55303, (612) 421-3680.

GENERAL SURGEON including orthopedic and gynecological surgical procedures. Falls Medical Center, P.A. on beautiful Rainy Lake, has 8 physicians plus consultants in pathology, orthopedics, cardiology, ophthalmology, ENT, OB-GYN, oral surgery; full-time radiologist, 62-bed hospital. First year salary guaranteed. Contact: Drs. Crow, Gorden or Schuft, Falls Medical Center, P.A., Shorewood Drive, International Falls, MN 56649, (218) 283-9431.

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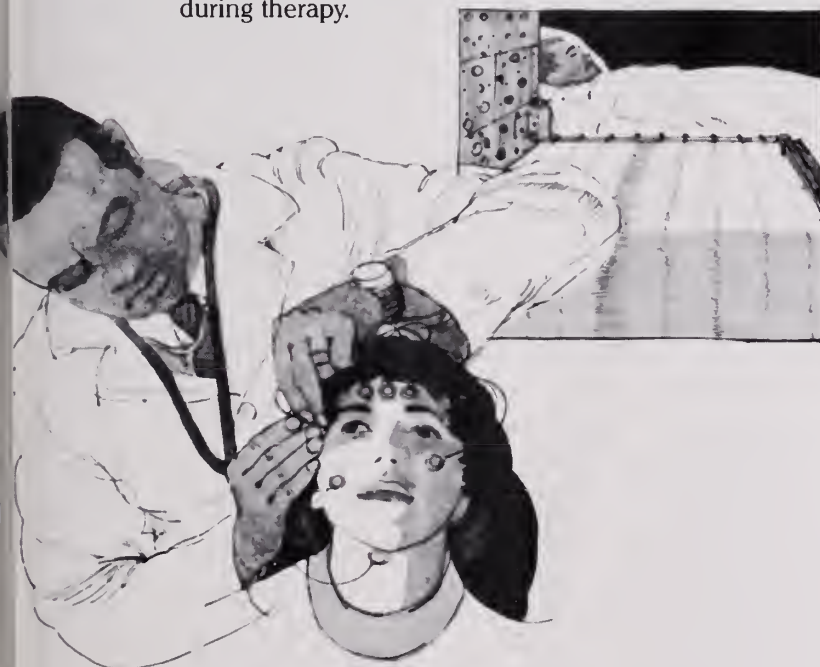
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15-mg/30-mg capsules



- Studied extensively in the sleep laboratory—the most valid environment for measuring hypnotic efficacy.¹⁻¹²
- Studied in over 200 clinical trials involving over 10,000 patients.¹³
- During long-term therapy, which is seldom required, periodic blood, kidney and liver function tests should be performed.
- Contraindicated in patients who are pregnant or hypersensitive to flurazepam.
- Caution patients about drinking alcohol, driving or operating hazardous machinery during therapy.



References: 1. Kales A et al: *J Clin Pharmacol* 17:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. 2. Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 3. Zimmerman AM: *Curr Ther Res* 13:18-22, Jan 1971. 4. Kales A et al: *JAMA* 241:1692-1695, Apr 20, 1979. 5. Kales A, Scharf MB, Kales JD: *Science* 201:1039-1041, Sep 15, 1978. 6. Kales A et al: *Clin Pharmacol Ther* 19:576-583, May 1976. 7. Kales A, Kales JD: *Pharmacol Physicians* 4:1-6, Sep 1970. 8. Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc* 27:541-546, Dec 1979. 9. Dement WC et al: *Behav Med* 5:25-31, Oct 1978. 10. Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 11. Karacan I, Williams RL, Smith JR: The

sleep laboratory in the investigation of sleep and sleep disturbances. Scientific exhibit at the 124th annual meeting of the American Psychiatric Association, Washington, DC, May 3-7, 1971. 12. Pollak CP, McGregor PA, Weitzman ED: The effects of flurazepam on daytime sleep after acute sleep-wake cycle reversal. Presented at the 15th annual meeting of the Association for Psychophysiological Study of Sleep, Edinburgh, Scotland, June 30-July 4, 1975. 13. Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

Dalmane®^{IV}
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Before prescribing, please consult complete product information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; in acute or chronic medical situations requiring restful sleep. Objective sleep laboratory data have shown effectiveness for at least 28 consecutive nights of administration. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended. Repeated therapy should only be undertaken with appropriate patient evaluation.

Contraindications: Known hypersensitivity to flurazepam HCl; pregnancy. Benzodiazepines may cause fetal damage when administered during pregnancy. Several studies suggest an increased risk of congenital malformations associated with benzodiazepine use during the first trimester. Warn patients of the potential risks to the fetus should the possibility of becoming pregnant exist while receiving flurazepam. Instruct patient to discontinue drug prior to becoming pregnant. Consider the possibility of pregnancy prior to instituting therapy.

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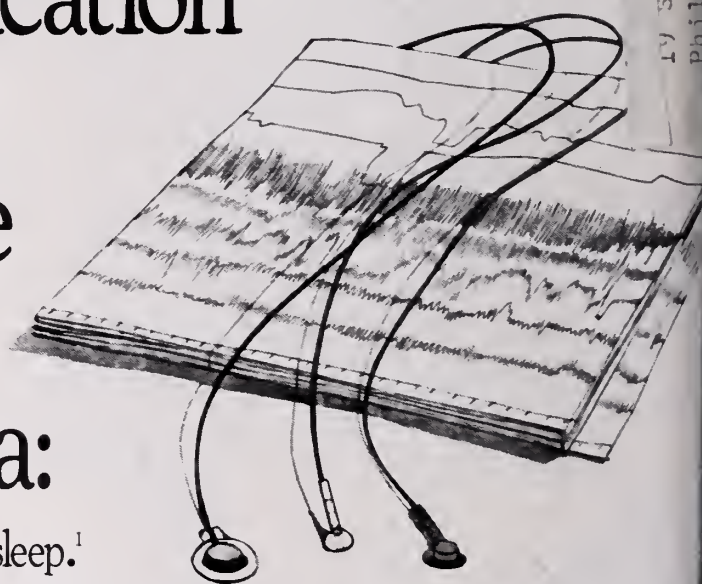
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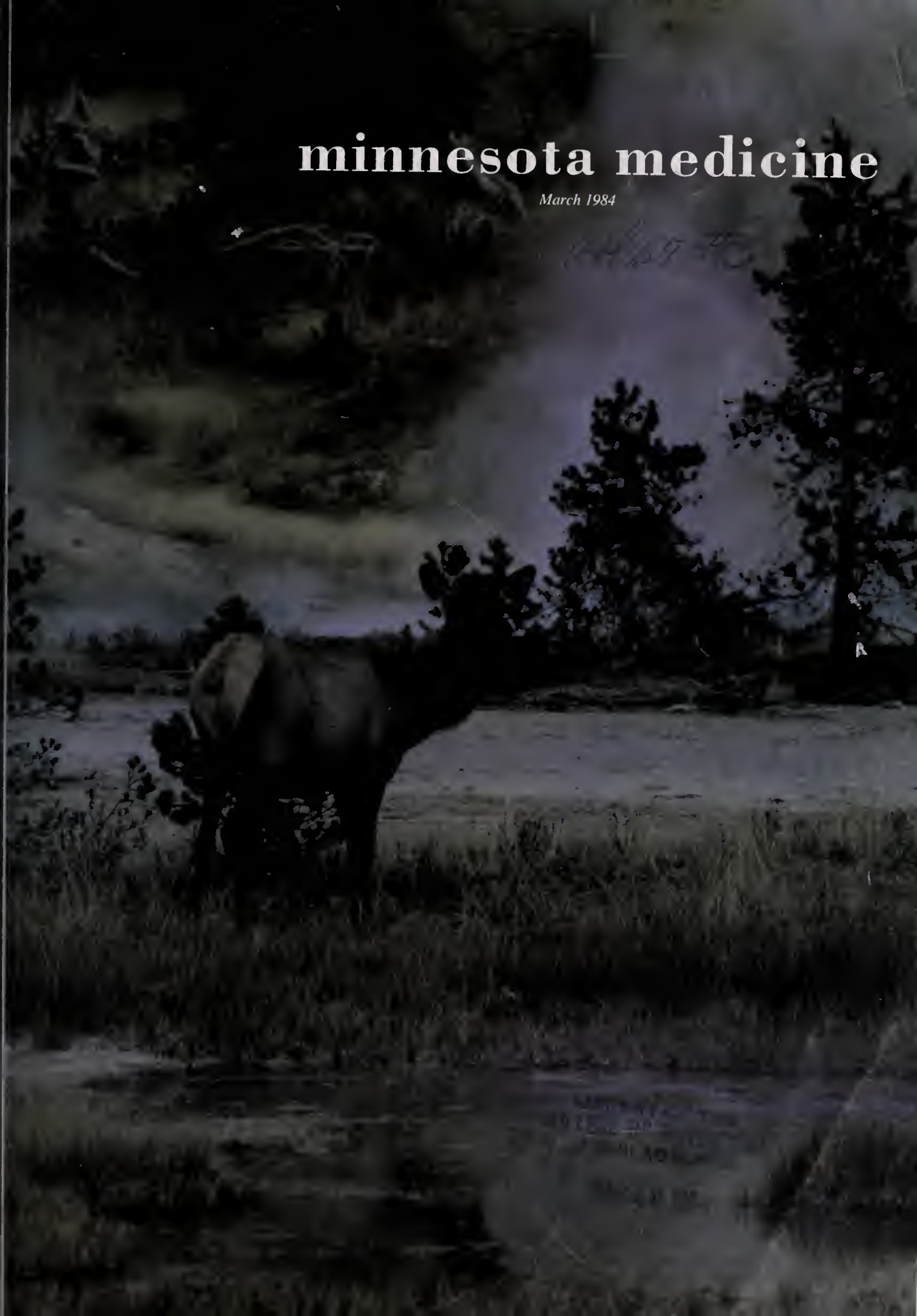
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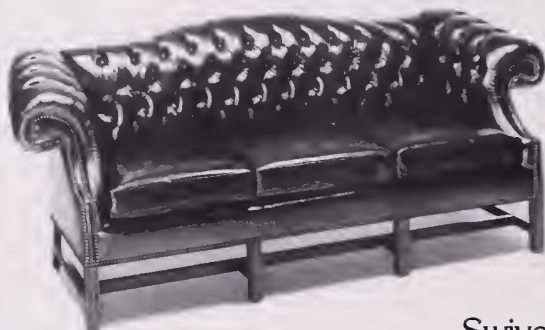
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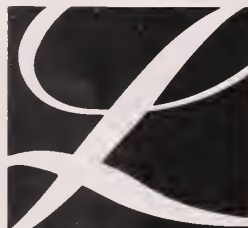
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Annual Subscription — \$18.00. Single copies — \$1.50.
Canadian — \$20.00. Foreign — \$30.00.

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President's Letter



Babel

Once upon a time all the world spoke a single language and used the same words. As men journeyed in the East they came upon a plain in the land of Shinar and settled there. They said to one another, "Come let us make bricks and bake them hard." They used bricks for stone and bitumen for mortar. "Come", they said, "let us build ourselves a city and a tower with its top in the heavens and make a name for ourselves or we will be dispersed all over the earth." Then the Lord came down to see the city which mortal man had built, and he said, "Here they are, one people, with a single language and now they have started to do this. Hence forward, nothing they have in mind will be beyond their reach. Come, let us go down there and confuse their speech, so they will not understand what they say to one another." So the Lord dispersed them and they left off building the city.

Genesis 11:1-8

This Biblical story about the Tower of Babel has some points worthy of our consideration.

1. The people recognized that lack of a common goal was equivalent to being widely dispersed, which dispersal, in itself, constituted alienation and seemed tantamount to failure and ineffectiveness. The human spirit requires the setting of goals and building of structures and organizations as means of accomplishing those goals.
2. According to the Lord Himself, there is no limit to human achievement if people will be able to communicate with each other.
3. A jealous God cleverly chose human nature to prevent completion of the project, while He presumably had an arsenal of earthquakes, cyclones, and lightening bolts at His disposal. He knew that mankind always arises from the ashes of environmental disasters to rebuild, whereas failure to communicate and subsequent failure to understand each other causes total disruption of many, if not most human projects.

One can readily visualize the expanding city and rising tower of Babel. As each person or group of persons related to this project a diversion of feelings, attitudes, and purposes developed. Much of the people's available resources was devoted to the construction of the tower. Since the purpose of the tower was

not directly related to personal needs or even to such group benefits as military defense but rather was to be a fulfillment of the human spirit, the unity of purpose was lost. Perhaps new words were coined to express differing perspectives, or more likely old words were used with differing meaning. Communication became confused, perhaps work stoppages or economic impasses ensued, and people dispersed in anger and frustration.

It may be that one of the main ingredients in the failure at Babel was that the project became so extravagant that people could not relate meaningfully to it and therefore, not meaningfully to each other in the context of this huge effort. Perhaps the original purpose of reaching the heavens was lost sight of, and the structure became an end in itself.

The process of constructing extravagant edifices and having alienation occur amongst ourselves in this process is so prevalent in our society today that this Biblical story has a strikingly modern flavor. What more vivid example could be at hand than the Super Bowl? To have a championship contest in any sport is valid, exciting, and usually highly entertaining. The NFL's effort to "build a tower to the heavens", however, has resulted in a grotesque display of exhibitionism, gaudiness, and froth-without-substance or purpose, covered over with an obscene diversion of

PRESIDENT'S LETTER

wealth (\$440,000 for 30 seconds of TV commercial time). All of this seemingly supercedes the meaning and quality of the game itself.

More to the point for physicians and their patients is the fact that our health care delivery system is now itself being looked upon by much of our society as a similar extravagance unrelated to reality. This is in the process of creating significant problems in communication and causing alienation of our people.

We have a host of new words and "loaded" old ones that had they had the comparison at hand, may have encouraged Babel's people to want to keep on building!!

Examples:

1. Care of sick people has become "health care."
2. A locked psychiatric ward is an "intensive treatment center."
3. A patient is now a "client," a term presumably employed to deny the usual dependent posture of the patient.
4. An order to "do not resuscitate", which once was almost always verbal and based on common sense, has become an acronym with intense legal, emotional, and ethical implications.
5. Medicare has changed the meaning of "doctor" from being an M.D. (with 6-12 years of post-graduate training) to several disciplines requiring far less training both qualitatively and quantitatively.
6. "Insurance" has been changed from the concept of financial protection against a definite but an uncommon risk to total payment for a service which is ill defined and in high demand.

More important, I feel, is that the edifice of medical care itself is being abandoned and even being dismantled. That medical care is a major diversion of our resources from other possible uses of those resources is undeniable. What is now being debated is whether, as in Babel's case, it constitutes reaching for the heavens out of context with human needs or whether it has remained valid as it relates to those needs. In the process of reaching a reasonable decision regarding this question it should be pertinent and helpful to examine the edifice of our medical care system. The following is an appraisal of the factors contributing to the elaborate nature of and, therefore, the high cost of medical care (that is to the height of our "tower"):

1. We have as the foundation of our social system the concept that *each individual is of unique importance*. All of our systems (legal, educational, commercial, spiritual, as well as medical) are based on this concept. I have come to

think of this as the ultimate in glorification or sanctification of the individual. Thus, each person has for his/her personal use the potential availability of the entire spectrum of technology. This has even been extended to include the fetus, for whom I have recently been made aware there are some 30 intrauterine surgical procedures applicable to correct defects.

2. *Medical care has great intrinsic value to the individual and to society as a whole.* There should be no need to expand on this idea, but it does seem that the inherent value of such things as the spectrum of prostheses available (valves, joints, lenses, etc.), the virtual elimination of such diseases as small pox and polio, the benefits of control of a wide spectrum of chronic diseases (hypertension, diabetes, and hypercholesteremia) the symptomatic improvement of other chronic diseases (emphysema and arthritis), and the availability to each person to have detailed knowledge of his/her own health status is frequently lost sight of in contemporary thinking.
3. *There is a high demand for medical care at the point of application to each individual's needs.* Perhaps only those who are intimately involved at the point of delivery of medical care can truly understand the intensity of this demand. When one's ownself or one's family is threatened by symptoms or disease, cost of care is seldom a factor in decision making. I can testify that efforts to invoke cost-concern as a reason to limit services can (and usually does) evoke a very significant degree of anger from the patient or the family who feel threatened by such deprivation.
4. *There is a very high cost of production of medical technology.* The development of drugs, for example, includes specific engineering of molecules to achieve targeted effects, discarding of many unsuccessful compounds on which there has already been an investment made, extensive testing for both effectiveness and safety, marketing costs, and the maintenance of adequate profit for the producers/sellers. This holds true for all appliances and other modalities of diagnosis and treatment as well. Special reference in this regard should be made to "high technology"-transplantation surgery, neonatal intensive care, and kidney dialysis are examples of extremely costly procedures, up to several hundreds of thousands of dollars expended per case.

5. *There are maximally trained personnel at the periphery of the delivery system at the point of individual application of knowledge and technology.* Physicians have invested sufficient time, money and effort in their education to achieve a Ph.D. in most other fields and in many instances two Ph.Ds.!! Such highly trained and knowledgeable people have justifiable reason to expect compensation commensurate with their training, the responsibility that they carry, and the results they achieve on the behalf of their patients. *Much more importantly from a cost standpoint they know intimately the diversity of causation of human ills and the complexity of treatment.* They frequently seek to react to the problems they are presented with by applying a greater spectrum of technology than would people with a much smaller fund of knowledge.
6. *Medical care is delivered in a legal environment which not only codifies and mandates that each individual has a legal right to the full spectrum of services available but injects the concept that the individual has a right to expect the optimum result available.* This latter point runs contrary to the reality of any intervention in a biologic system wherein, regardless of the expertise and care used, a certain percentage of failures will occur due to biologic variability. The legal environment also establishes the true monetary value of medical services. Thousands of juries which constitute the grassroots public have established that the entire spectrum of these services are worth up to several millions of dollars to the individual who suffers failed expectations.
7. *The health care system is deceptively cheap to many of those who use it.* The purchase of a service promotes frequent use when such use is perceived of as being free or already paid for. The manipulation of the word "insurance" to mean "service" has facilitated this concept. *(Most manipulated words do serve someone's purpose.)* Thus, one can "insure" oneself against a house fire or an automobile accident or having a catastrophic illness. One cannot "insure" against needing a urinalysis or feeling tired.

Even the cost of insurance has been hidden from public view by being subsidized by tax law in that it is a non-tax item which employers pay for in many instances. First dollar coverage paid for by someone else with neither party

paying taxes on the cost is looked upon by some as the root cause of health care cost inflation (I see it as one of several causes, hence the length of this editorial).

8. *Health care has a potentially universal market.* Virtually all people will need it at some time in their lives. Furthermore the older the population grows the greater the market in contrast to other goods and services which may tend to decrease as the population ages. Most people do not plan on owning a Rolls Royce or a Lear jet. By contrast, each citizen is a potential user of high-cost medical technology. The very success of medical care automatically expands the market. A person who is resuscitated from a cardiac arrest will very likely need on-going medical treatment to treat his/her heart disease.
9. *The very essence of high quality of medical care is by definition not efficient from a cost effective standpoint.* Osler's dictum to "never pass a belly without palpating it" reflects the meticulous carefulness which is the fabric out of which our profession is made. Only recently has this quality of thoroughness become antithema to good practice in the public's mind. The physician is a problem solver. He/she is the patient's advocate. Technology and knowledge are the available tools to be used. The terms "waste" and "defensive medicine" have been concepts that have developed only since society has realized that we now have to make a choice regarding resource allocations and since attorneys have fine-tuned their own craft. We physicians recognize that we must bear a responsibility toward the patient's economic welfare, but the fact remains that problem solving is frequently not economically cost-effective.

If we analyze this structure we have to ask ourselves whether it is elaborate beyond valid goals and societal needs. If so, wherein do we make our cuts? Already, changes have occurred which will insure that doctor's incomes are to be drastically reduced, the concept of clinical thoroughness be curtailed, and physicians be replaced by people of far less training. These steps have been politically easy to institute, but there are many of us who predict that the total cost thus saved will be minimal. The next steps will be the hard ones. Can we abandon our basic political philosophy of individuality, cut off large segments of our potential market, (for example, by denying expensive care after a certain age), deny service with first dollar protection, drastically reduce our research programs, or significantly change our legal environment? There

PRESIDENT'S LETTER

are no politically weak and therefore tempting targets involved in such steps.

Thus, we in the medical profession stand on our tower. In our hands are blue-prints to build still higher. However, all about us is a "Babel" of people having much difficulty in understanding the cost-benefit ratio of our structure. Alienation is wide spread. Many are already dispersing in dissatisfaction and confusion of purpose. Some are actively seeking to dismantle our tower.

We look around us and note other towers. Nearby is one labeled professional sports. We note that it has a foundation of tax law which has supported a mushroom growth and just above this are pillars consisting of people of extreme wealth who use the tower to hide much of their income from taxation and to satisfy their burdensome egos. Up above we note that the part of the structure labeled "teams" has largely collapsed about a host of common folks who mourn this destruction. In its place has grown a large number of individual athletes whose wallets are grotesquely

bulging with money. Many of them are visably unhappy as they gaze on the wallets of a few of their associates which may be even larger than their own.

Over yonder, however, is a huge tower which overwhelms everything else in sight. It is called National Defense. We leave our own structure and walk to inspect it. There on the ground about it is scattered debris, including huge mounds of discarded, unused weapons, amongst which we see a screw driver which apparently has fallen from the tower above. We pick it up and note that the price tag has been left on it. It reads \$746.00. We look up at this tower which truly does reach the heavens.

We wonder . . .



Donald C. Bell, M.D.
President

Minnesota Medical Association

Seventh Annual Black Hills Seminar

The Seventh Annual Black Hills Seminar on Advances in Clinical Pediatrics — June 20, 21 and 22, 1984, at Sylvan Lake Resort, Custer, South Dakota, sponsored by the Department of Pediatrics and Adolescent Medicine, University of South Dakota School of Medicine. Guest faculty include Drs. Frank Oski, John Scanlon, Dan Levin, Robert Vernier and H. David Wilson. For complete conference information contact:

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Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: The Medical Industrial Complex of Minnesota* (MEDICOM) Fourth of a Series

"Though we name the things we know, we do not necessarily know them because we name them."

Homer W. Smith, 1895-1962
Circulation of the Blood
(ed. by A.P. Fishman and
D.W. Richards), Ch. 9

EXCELSIOR, MINNESOTA — Here we are at InterStudy on Saint Valentine's Day, attending a conference called the "Industrialization of Medicine in the Twin Cities." This being an InterStudy conference, you being fierce competitors in the Twin City health care system, and the topic being the Industrialization of Medicine, I can only conclude we're here to study each other to find out if any of us really has a heart. But each of us must have other reasons for being here. Perhaps I should begin by explaining why I think I'm here to address this InterStudy audience.

I'm certainly not here because I'm a practicing physician. For a practicing physician to deliver the keynote address at an InterStudy conference is akin to Anwar Sadat addressing the Israeli parliament. After all, in many respects, the practice of fee-for-service Medicine, in which physicians regard themselves as agents to maximize health benefits for patients and the operation of health care corporations, in which physicians serve as agents to reduce costs for the Corporation, represents a clash between two cultures. But like Israel and Egypt, we find we need each other to survive and to grow, so we seek accommodations. But I assume I wasn't invited here to speak for fee-for-service Medicine. I may be a masochist, but I'm not a *Sadatist*.

I'm also not here because I'm a pathologist. Pathologists are not known for giving timely or lively speeches. Pathologists, for those of you who are ignorant of our function in the world of Medicine, are doctors who know everything but it's too late. At an Edina cocktail party, a society matron asked me what I did. I told her I was a pathologist, and she said: "Poor thing. Did your mother have any children who *lived*?" I informed her old pathologists never die; they just undergo hardening of the categories with rigor mortis.

As nearly as I can tell, I'm here for three reasons.

First Reason — Transformation Editorial

In November I wrote an editorial in MINNESOTA MEDICINE entitled: "The Corporate Transformation of Medicine in Minnesota: The Accelerating Industrialization of Health Care in the Twin Cities." That editorial served as the lead-in for an entire issue with the title of "Medicine and the Coming of Corporations."

Briefly, in that editorial, I said physicians were struggling with corporations for control of health care, and corporations were winning because they had access to capital; because they could cope with bureaucratic phenomena; because they had management skills to build a team of professionals from different disciplines to take their product to market; and because they thought in terms of the organization and its market.

I predicted within a few years perhaps seven or eight health care organizations would

*Talk given at Interstudy Conference "The Industrialization of Medical Care in the Twin Cities." February 14, 1984.

dominate the Twin Cities Health Care Market. I said physicians ought to get their acts together so they could take the lead within these organizations, form their own organizations to compete on the basis of price, and serve as quality watchdogs for patients. Finally, I presented evidence that this corporate transformation was accelerating rapidly, leaving anxious physicians, apprehensive hospital administrators, bodies of other future shock victims, and confident HMO executives in its wake.

How was that editorial received? Well, as one physician told me, "It's a good thing we don't shoot the messenger carrying bad news anymore." But for the most part, it was received as I intended — as shock therapy, as an eye opener, and a catalyst for action. Physicians are as smart and well-educated as anybody else. Indeed, many are excellent businessmen and superb organizers. Even so, physicians will need capital and professional managers to launch competing organizations. To think otherwise is naive and misguided. We need to reshape our thinking in light of the new realities.

Second Reason — Paul Ellwood

I'm here because Paul Ellwood, whom I respect, invited me. In preparing for this talk, I called or had breakfast or lunch with a half-dozen other Twin Cities health care operatives to find out what Paul had on his mind. One participant in this conference remarked: "Paul just wants to reassemble the Twin Cities Health Care Buggy in one place, so he can kick the tires, and see where it's going." But each of the others said, in effect:

"I don't know, but Paul asked me to come, and I'm going." This attitude tells you something about the Twin Cities. Health care leaders here — be they from medical societies, hospitals, businesses, or HMOs — work cooperatively together because we communicate frequently with each other. It's easy to cross lines in the Twin Cities and to learn about the other person's point of view.

Why did Paul ask me to deliver this keynote address? I don't know, but I have a few educated guesses. In the first place, I used the right key words in the title of the editorial. Paul has made no secret that his goal in life is to effect the "transformation" of American Medicine from a cottage industry practicing fragmented care to an interlocking rational system of corporations offering competing plans and responding to market forces.

I'm sure he even appreciated my subtitle: "The Accelerating Industrialization of Health Care in the Twin Cities." Paul has always been a champion of change in the health care system. To see the "industrialization" coming so rapidly in his home city in his lifetime must give him great pleasure. In a forthcoming book "HMO DEVELOPMENT: MINNEAPOLIS-ST. PAUL AND CHICAGO," Odin Anderson, a veteran commentator on the health care wars and a Professor at the University of Chicago School of Business, comments on Paul's role as an agent of change. After comparing the essential ingredients for HMO development in Chicago and the Twin Cities, Anderson adds:

"I have been told, however, that Paul Ellwood and his InterStudy were a necessary element. We cannot, however, have Paul Ellwoods in every metropolitan area and his influence really goes beyond the Twin Cities. I believe Ellwood hastened the Twin Cities HMO development, but it would have come about anyway. His agency produced some first rate administrators who permeate the HMOs in the Twin Cities."¹

What, other than producing at InterStudy a flock of crack administrators and entrepreneurs and health policy makers for Senators Gephart and Durenburger — all of whom are busy transforming the corporate landscape of America, has Paul contributed? Certainly not the concept of prepaid medical care. A group of California clinicians at the Ross-Loos Clinic in Los Angeles did that in 1929. At the time, Paul was three years old. No doubt Paul was a precocious California kid. He graduated with distinction from Stanford in 1949. Still, he wasn't that smart in 1929.

Paul did, however, coin the term "Health Maintenance Organization" in 1970, the year he sold President Nixon on the idea. But he lived to rue that label when it was attached to a highly specific organizational arrangement set forth in the HMO act of 1973. Not only did early HMOs have little to do with "maintaining health," i.e. in promoting

health and preventing disease, but the HMO act put him in bed with the government. His detractors have said ever since Paul is a liberal, a socialist, or a tool of the bureaucrats. Privately he will tell you he champions free enterprise. What could be more conservative, he asks, than having private corporations competing to manage health care.

The truth is that Paul prefers the term "Competitive Medical Plan," or CMP, to HMO because "Competitive Medical Plan" captures the concept of a medical marketplace organized around price-competition with interplay of market forces.

In any event, it is my view that Paul, who has talked nonstop for the last 15 years about the competitive approach to medical care reform, has made this singular contribution: *He has made the corporation a legitimate organ of society for providing health care. He saw the corporation as a way of preserving the private enterprise of Medicine, as a way of warding off the government.* In his various roles — consultant to business, government, and medicine; philosopher on the place of organizations in the medical marketplace; and innovator, shaker, and gadfly — he has made health care organizations competing in the marketplace on the basis of price as a *legitimate alternative to traditional medical practice.*

Perhaps at this juncture, as a beneficiary and a creature of the old system, I ought to add that I regret to see its passing. It was nice to be your own boss, making your own decisions, being your own person, charting your own course, and doing your own things, with only your peers as your judges. To be free to choose who you are, what you do, and how you do it are the essence of being a physician. The prospects of being an anonymous cog — even an important and well-paid cog — in a corporate machine hold no joy for me nor most other physicians. For the physician, individualism and the first person singular are closely related to freedom and are what the joys of fee-for-service practice are all about.

Third Reason — Naming the Minnesota Medical Care Complex

Lastly, I'm here because I'm a member of the Medical Industrial Complex of Minnesota, or MEDICOM. You, too, are members of MEDICOM. The time has come to name the complex — to give it a handle that people can hold on to. You see, over the last ten years — partly because of Paul's InterStudy work, partly because of managers who have engineered the Twin Cities rapid HMO penetration, partly because of the organizational leadership of Minnesota physicians in forming coalitions with business, partly because of the farflung influence of the University of Minnesota's program in Hospital and Health Care Administration, partly because of the establishment here of headquarters of regional and national nonprofit multihospital chains, partly because of the initiatives of Twin Cities business leaders, partly because of the Mayo Clinic's international reputation for excellence, partly because of the University of Minnesota Medical School's pre-eminence in the high technology of organ transplants, immunology, and cardiac surgery, and partly because Minnesota is a world leader in producing cardiac pacemakers, dialysis equipment, molecular genetic products, hearing aids, new drug delivery devices, and electronic devices to control pain and organ function — Minnesota has emerged as a world leader in managing health care organizations and in developing new medical technology.

This is a state where education, brains, and know-how have transformed us into a world leader in medical matters. This is a state where the state government is laying plans to build a 40 story World Trade Center, at least half of which will be devoted to medical technology

For these reasons, you often hear Minnesota referred to as the "Silicon Valley of Health Care." Well, maybe. But we're no valley, and we're no chip off California's block. Lee Berlin, Chairman of LecTec and Commissioner of Governor Perpich's Committee on Medical Technology, will follow me on this program. He is going to talk about

Minnesota's "Medical Alley" — a geographic strip of innovative high-tech medical organizations that runs from Rochester, through the Twin Cities, to Duluth, and clear to Baudette. Now I know this state has entrepreneurial traditions and well-honed competitive instincts, but we're not alley fighters. Besides, "Medical Alley" has another bad connotation. The cluster of medical technology firms around the National Institutes of Health, in Bethesda, Maryland, which feeds off the carcasses of the Federal Health Establishment, are said to reside in "Vulture Alley."

Then, of course, there's the famed "Research Triangle" in North Carolina, so named because it sits in a triangle between Duke, North Carolina State, and the University of North Carolina. Unfortunately, Minnesota has only one dominant University. No such triangle of universities exists. Anyway, Minnesota is shaped like a rectangle and is a state for squares.

Maybe, in trying to come up with a name for our Medical-Industrial Complex, we could build a name around our lakes. How about "Health Enterprises of Land of Lakes," or HELL. Or, "Health Endeavors at Lakes," or HEALS. Or even "Health Enterprises of Lakes Complex," or HELEX. I don't know about you, but for my taste, these names are too *lakeadaisical* and *lakelustre*.

In Closing and in Desperation

So, in closing and in desperation, I return to my original name: "The Medical Industrial Complex of Minnesota," or MEDICOM. Why not? If Governor Perpich and Mr. Berlin's international campaign to promote "Medical Alley" pays off, we'll be a world center for the medical industry. And if Physicians Health Plan and SHARE expand nationally, we may well be the hub of a national medical management complex.

If you give the matter any thought at all, you'll realize "Medical-Industrial Complex" has historical roots, too. Just remember, the late Malcohm Moos, a native Minnesotan and a president of the University of Minnesota, coined the term "Military-Industrial Complex" in a speech he wrote for President Dwight David Eisenhower in 1959. And in 1980, Arnold Relman, Editor of the NEW ENGLAND JOURNAL OF MEDICINE, writing in his own journal and following Malcohm Moos's lead, permanently imbedded the term "Medical-Industrial Complex" in the language of modern health care.² It is true Relman was warning us about the hazard of mixing medicine with profits, but Relman has a superiority complex about business, and we'll forgive him for tainting our name.

Besides, the word "complex" fits the health care situation here in Minnesota perfectly. As you well know, "complex" has three meanings: (1) a fixation or obsession of the mind; (2) a whole made up of interrelated parts; and (3) complicated or intricate. Ever since the Mayo Clinic was founded in 1887, and the University of Minnesota reared its head as a medical school of the first rank, we've had a complex about excellence in this state. And as conferences like this attest, we see this excellence as a whole made up of its interrelated parts. Finally, we recognize any health system, even an excellent one like Minnesota's, is complex. I was reminded of this complexity when I read these words by Doctor George Johnson, Director of the Program in Hospital and Health Care Administration at the University of Minnesota:


"The creativity characteristic of Minnesota graduates has enabled them to respond with vision to the demands of their profession, developing innovative approaches to the management of today's rapidly changing and highly complex health care delivery system. Many of the nation's most prominent and complex hospitals are run by Minnesota graduates . . . Effective management is critical to the success of what is now a very complex industry, whether that success is measured in terms of patient care, institutional and human resources management, medical research, or fiscal responsibility."³

In one short passage, Doctor Johnson refers to a "highly complex health care delivery system," "complex hospitals," and a "very complex industry." You can't get much

EDITOR'S NOTEBOOK

more complex than that — a complex within a complex inside a complex. Or, as Winston Churchill said of Russia, Health Care is a conundrum wrapped in a mystery inside an enigma.

Although Doctor Relman used the term "Medical-Industrial Complex" in a pejorative sense — as an evil force encroaching on the sanctity of Medicine — I'm suggesting we use the name "Medical-Industrial Complex of Minnesota" positively. Health care people in this state have the experience, the knowledge, the will, and the spirit to put together the best from Medicine and Business. We believe the Medical-Industrial Complex is manageable. Given the talents of people like you in this audience and a spirit of cooperation, we can unite two competing ideologies — business (self-interest) and Medicine (striving for the patient's individual good).



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1. HMO Development, Minneapolis-St. Paul and Chicago. Prepared for the 25th Annual George Bugbee Symposium on Hospital Affairs, May 20, 1983, by the Center for Health Administration Studies, Graduate School of Business, University of Chicago, Chicago, Illinois.
2. Relman, AS: The new medical industrial complex. *N Engl J Med* 303:963-970, 1980.
3. Investment in Tomorrow's Health Care Leaders. Brochure produced by Affiliated Hospital Services, Inc., Eden Prairie, as a contribution to the Minnesota Program in Hospital and Health Care Administration and its Alumni Association Foundation.

Cover Photograph "Yellowstone Dusk"

Dr. George K. Larsen, a family practitioner practicing in Albert Lea, took the cover photograph at Yellowstone National Park in September 1982, at dusk, while hiking on a trail. He used a Canon F-1 with 50 mm lens. Dr. Larsen told the editors he enjoys hiking at dawn and dusk and takes his camera along to capture wildlife on film.

He is Chairman of the Board of Directors of the Albert Lea Medical and Surgical Center, a multispecialty clinic in Albert Lea. Educated at the Medical College of Georgia in Augusta, Dr. Larsen interned at the Mayo Clinic in Rochester. He is married to Robbie, a free-lance photographer, and they have three children.

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Report of the Nominating Committee

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MMA Bylaws provide that "after the Nominating Committee has made its report to the House of Delegates, any delegate may nominate any eligible member for any office of the Association to be filled at such annual meeting."

Members of the 1984 MMA Nominating Committee*

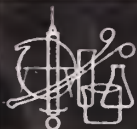
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References:

1. Stone PH, Turin ZG, Muller JE. Efficacy of nifedipine therapy for refractory angina pectoris. *Am Heart J* 104 672-681, September 1982.
2. Antman E, Muller J, Goldberg S, et al. Nifedipine therapy for coronary artery spasm. Experience in 127 patients. *N Engl J Med* 302 1269-1273, June 5, 1980.

BRIEF SUMMARY

PRDCARDIA® (nifedipine) CAPSULES

For Oral Use

INDICATIONS AND USAGE: I. **Vasospastic Angina:** PRDCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation; 2) angina or coronary artery spasm provoked by ergonovine; or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PRDCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm or when angina is refractory to nitrates and/or adequate doses of beta blockers.

II. **Chronic Stable Angina (Classical Effort-Associated Angina):** PRDCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PRDCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance. But confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PRDCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS: Known hypersensitivity reaction to PRDCARDIA.

WARNINGS: Excessive Hypotension: Although in most patients the hypotensive effect of PRDCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PRDCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PRDCARDIA and a beta blocker, but the possibility that it may occur with PRDCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PRDCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PRDCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PRDCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PRDCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PRDCARDIA initiation. It is important to taper beta blockers if possible, rather than stopping them abruptly before beginning PRDCARDIA.

Congestive Heart Failure: Rarely, patients, usually receiving a beta blocker, have developed heart failure after beginning PRDCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS, General: **Hypotension:** Because PRDCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PRDCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PRDCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug Interactions: Beta-adrenergic blocking agents. (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PRDCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates. PRDCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis: Administration of PRDCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PRDCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility: When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy: Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in rats, mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients; transient hypotension in about 5%; palpitation in about 2%; and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PRDCARDIA or concomitant antianginal medication. Additionally, the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PRDCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT, and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after eleven months of nifedipine therapy. The relationship to PRDCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PRDCARDIA therapy, has been reported twice in the extensive world literature.

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Broncholithiasis

MARK K. WEDEL, M.D.*; A. STUART HANSON, M.D.*; and KENNETH HEITHOFF, M.D.†

Broncholithiasis is a common radiographic finding with a variety of clinical presentations. These presentations are reviewed, along with a discussion of the etiology, diagnosis and treatment of this problem.

BRONCHOLITHIASIS HAS a relatively mundane radiographic appearance with a variety of dramatic clinical presentations. Pulmonary granulomata and mediastinal calcifications are common x-ray findings and are generally mentioned only incidentally when reviewing chest films. When these calcifications erode into the airway, however, frank hemoptysis, persistent or post-obstructive pneumonia, or lithoptysis may occur. Our recent experience with two such patients is presented below and is followed by a brief summary of relevant literature.

A 19-year-old dental hygienist was referred for evaluation of recurrent frank hemoptysis. Previously in excellent health, she had had three episodes of gross hemoptysis in the preceding six months. Each episode had occurred without warning, lasted two to three days, and was not associated with fever, chest pain, menses or constitutional symptoms. Blood loss during each of these episodes was estimated at over 35 ccs. Physical exam was unremarkable. Chest X-ray revealed a minimal right upper lobe infiltrate with central calcification (Figure 1). Computed tomography revealed a very dense lesion in the right upper lobe with a distal infiltrate (Figure 2). Bronchoscopy was normal. Presumptive diagnosis was hemoptysis secondary to broncholithiasis. At thoracotomy a broncholith with distal bronchiectasis was found. Wedge resection was carried out and recovery had been uneventful.

Case #2 is that of a 56-year-old merchandising executive who discontinued a three-pack-per-day cigarette habit three years ago. Other than a hospitalization for "bronchitis" three years ago, he enjoyed excellent health. He presented with the acute onset of cough, pleuritic chest pain and fever to 103.8°. Physical examination revealed a febrile but otherwise well-appearing white male with inspiratory rales in a right lower lobe distribution. Chest Xray showed a right lower lobe pneumonia with scattered hilar cal-

cifications (Figure 3). Erythromycin was begun with partial but incomplete symptomatic relief. Over the ensuing ten weeks, intermittent fever, night sweats, cough, malaise and weight loss persisted. The chest film remained unchanged. Bronchoscopy was performed and a right lower lobe obstructing lesion was seen, thought grossly to represent "polypoid tumor

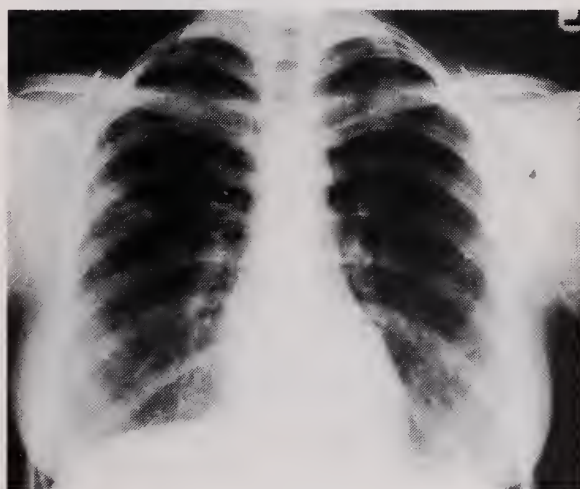


Fig. 1 — Admission chest film from case one showing right upper lobe calcification and distal infiltrate.

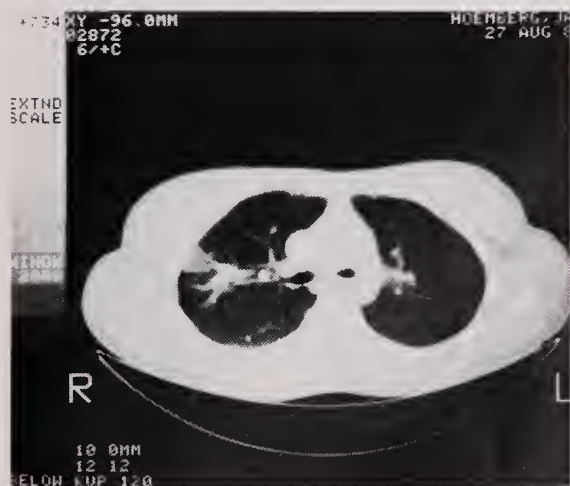


Fig. 2 — Computed tomograph of case one, showing dense proximal calcification.

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growth". Biopsies were all negative. Twenty-four hours following the procedure the patient suddenly coughed up a 10 mm. x 5 mm. "chunk" (Figure 4) followed by copious purulent secretions. A diagnosis of probable broncholith with post obstructive pneumonia was made. The patient was treated with ten days of amoxicillin. Followup chest film (Figure 5) showed improvement in the right lower lobe infiltrate and absence of the previously noted hilar calcification. Followup bronchoscopy was entirely normal and the patient has returned to his former state of good health.

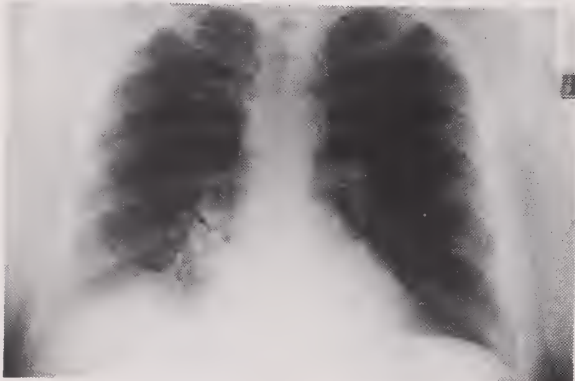


Fig. 3 — Admission chest film from case two, showing right lower lobe pneumonia and proximal calcification.

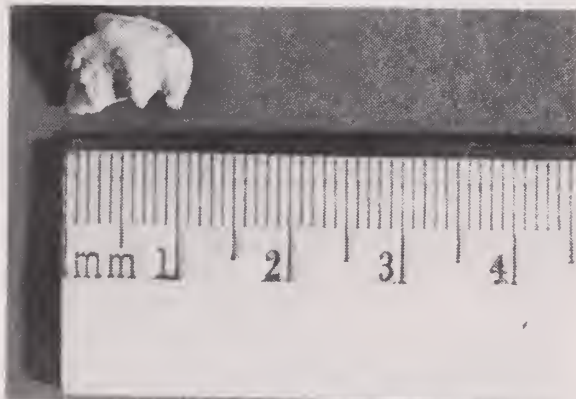


Fig. 4 — Expectorated broncholith from case two.

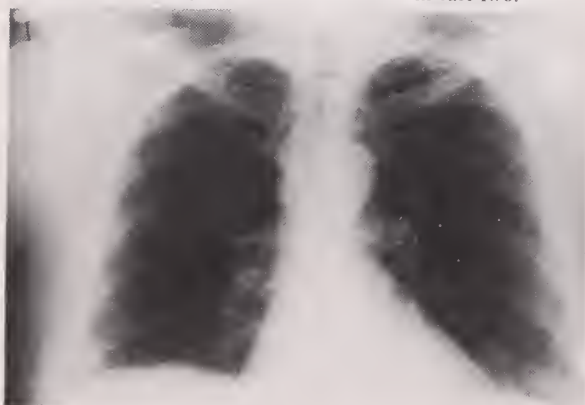


Fig. 5 — Followup chest film from case two following expectoration of broncholith and clearing of the pneumonia.

These two cases represent two of the major complications of broncholithiasis, namely, hemoptysis and endobronchial obstruction.

Calcium deposits in the lung have been referred to by a variety of names, including lung stones, pulmoliths, pneumoliths, or more commonly, as broncholiths. While the exact mechanism of calcium deposition is incompletely understood, it is assumed that necrotic tissue in the lung and surrounding lymph nodes becomes alkaline during the healing process. This alkalinity allows calcium phosphate and calcium carbonate to precipitate and as these calcium deposits aggregate, macroscopic concretions occur.

Previous infections — most commonly histoplasmosis — are the most common cause of pulmonary calcifications. Tuberculosis, coccidioidomycosis, nocardiosis and actinomycosis have also been reported. Additional etiologies include sarcoidosis, silicosis, and carcinoid tumor.

The exact nature whereby the calcified nodule or lymph node erodes into the bronchus is yet another mystery. Most feel the continuous motion of the cardiopulmonary system is somehow operative in the eroding into the tracheobronchial tree. Once that process has begun, symptoms may become apparent.

These symptoms may include cough, hemoptysis, localized wheezing, or the coughing of sandy or gritty matter (lithoptysis). With the exception of lithoptysis, all of these symptoms are entirely non-specific. When they occur in association with pulmonary calcifications, however, broncholithiasis should always be suspected. Physical examination findings are equally non-specific, and chest films, while sensitive are, nonetheless, hardly specific. Calcified lymph nodes on a chest film are a common radiologic finding and may or may not be responsible for symptoms. Localized atelectasis or persisting pneumonia in anatomic proximity to a calcified node is a more suggestive and helpful x-ray finding. Fiberoptic bronchoscopy, bronchography and CAT scanning may all assist in the diagnosis of symptomatic broncholithiasis.

The only successful intervention is actual physical removal of the stone, either bronchoscopically, surgically, or spontaneously. Rigid bronchoscopy is occasionally preferable to fiberoptic bronchoscopy for the removal of some broncholiths. Persistent or recurrent hemoptysis, chronic cough, or a persistent suppurative process are all indications for removal. Frequently wedge resection is adequate. Fortunately, surgery is definitive therapy and recurrence of symptoms is a rare event.

References will be found on page 165.

Moxalactam-Induced Hypoprothrombinemia with Intrahepatic Bleeding

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GARY R. KRAVITZ, M.D.‡ and THOMAS R. SMITH, M.D.‡

A case of intrahepatic hemorrhage secondary to moxalactam-induced hypoprothrombinemia is reported. The bleeding occurred on day 8 of therapy. A prothrombin time of 68.8s preceded a 4.8g% drop in hemoglobin and the discovery by CT scan of two lesions in right lobe of the liver. The patient's prothrombin time, vital signs and hemoglobin stabilized after administration of vitamin K1, IV fluid, and whole blood.

MOXALACTAM HAS recently been reported to cause hypoprothrombinemia. Hematuria, epistaxis and hematochezia have occurred in moxalactam treated patients having elevated prothrombin times^{1,2}. We report a case of moxalactam-induced hypoprothrombinemia resulting in life-threatening intrahepatic bleeding.

Case Report

A 48-year-old white female was admitted to the hospital for persistent fever and right upper quadrant abdominal pain. Her medical history was remarkable for recurrent abdominal pains and multiple abdominal surgical procedures.

The patient was scheduled for an exploratory laparotomy after negative results were obtained from an exhaustive medical evaluation, which had included a normal abdominal CT scan and ultrasound. Moxalactam 1 g IV every six hours was given for six doses preoperatively. After exploration proved negative, partial gastrectomy, gastroenterostomy, vagotomy, and gastrostomy were performed to prevent reflux filling of the bile duct. Two days postoperatively, the patient developed fevers and moxalactam was continued.

On September 5, 1982, day eight for moxalactam, the patient developed acute abdominal pain. A CT scan revealed a 3 cm low density lesion in the right lobe of the liver. Needle aspiration of this lesion produced 40 cc of grossly bloody fluid. A prothrombin time (PT) drawn the next day was 68.8s (control 11.9s). Moxalactam was discontinued and 20 mg. of vitamin K1 IM were given.

The following morning her PT was normal; how-

ever, she was hypotensive, tachycardic and oliguric. Her hemoglobin had fallen to 8.4 g% from 13.2 g% on September 2, 1982. There was no evidence of cutaneous or GI bleeding. All other laboratory studies, including a platelet count and serum amylase, were normal. The patient's vital signs and hemoglobin stabilized after administration of fluids and 2 units of blood. Other medications administered to the patient have not been associated with hypoprothrombinemia.

The patient continued to have low grade fevers. A CT scan on September 15, 1982 showed two low density lesions in the right lobe of the liver, one 4 cm and one 8 cm in diameter. The 8 cm lesion was located in the posterior lobe and was felt to represent an area of spontaneous bleeding which occurred subsequent to the CT scan of September 5, 1982. Drainage catheters were inserted into both lesions but yielded only several drops of dark viscous bloody fluid consistent with organizing hematomas. Aerobic and anaerobic cultures of fluid aspirated from these lesions were negative on all occasions.

Discussion

Moxalactam is a broad-spectrum third-generation cephalosporin which received Food and Drug Administration approval in November 1981. During clinical trials of this antibiotic, the development of hypoprothrombinemia was documented. According to the manufacturer, decreased prothrombin, increased bleeding times and thrombocytopenia occurred in one of 135 patients.³

The true incidence of hypoprothrombinemia is unknown since prothrombin times were not routinely monitored during clinical trials. Prospective studies are currently being conducted to clarify this issue. Of practical concern, bleeding secondary to moxalactam-induced hypoprothrombinemia has been reported.

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Several mechanisms have been postulated to explain antibiotic-induced coagulopathy. In the case of moxalactam and other second- and third-generation cephalosporins, it is believed that the antibiotic suppresses gut flora responsible for vitamin K synthesis. Several cephalosporin antibiotics associated with bleeding episodes (e.g., cefoperazone, cefamandole and moxalactam) possess a methylthiotetrazole side chain. The possibility that this chemical group increases the likelihood of antibiotic-induced hypoprothrombinemia has been suggested⁴. Variables contributing to antibiotic-induced vitamin K deficiency are poor nutritional status, major surgery and high antibiotic serum concentrations^{5,6}. For these reasons, the manufacturer of moxalactam suggests that prophylactic administration of vitamin K "may be indicated for elderly, debilitated or otherwise compromised patients" receiving moxalactam³.

Preoperatively, the patient required total parenteral nutrition. She appeared to be nutritionally sound based on a normal serum protein and stable body weight. To ensure adequate dietary intake, daily supplements of Precision LR providing 30-45 mcg of vitamin K1 were given for several weeks preceding surgery.

No vitamin K was administered until the hypoprothrombinemia was discovered. However, the occurrence of bleeding on day 8 suggests that dietary vitamin K deficiency was not the sole cause of the hypoprothrombinemia⁷. We conclude that moxalactam administration in this surgical patient was the most likely cause of the hypoprothrombinemia.

Early experience with moxalactam suggested that hypoprothrombinemia and bleeding occur rarely⁸. Recent case reports raise the possibility that hypoprothrombinemia may occur more frequently with

moxalactam than with older antibiotics. With the increasing use of moxalactam, more patients will be exposed to an infrequent, but significant risk, as demonstrated by this case. To decrease the chance of similar cases we recommend frequent monitoring of PT times in those patients receiving moxalactam for more than 3 days and not receiving daily vitamin K1.

Addendum

Since this case report was written, additional data has yielded pertinent information related to it. In the *Lancet*, July 23, 1983, a study was published which supported the premise that the methylthiotetrazole portion of the moxalactam molecule has anticoagulant activity. The study results demonstrated that methylthiotetrazole inhibits the gamma carboxylation of glutamic acid. Warfarin is thought to inhibit the formation of prothrombin by the identical mechanism.¹ Within two days of the publication of the *Lancet* report, the manufacturer announced that it had revised the package insert for moxalactam. Specifically, the revised insert cited a 2.5% incidence of bleeding complications in patients who received a minimum of four days of moxalactam. The dosage recommendations were also changed, reducing the usual daily dose from 2-6g to 2-4g. The manufacturer based this change on information which suggested that moxalactam-induced platelet inhibition is dose-related and occurs infrequently at daily doses of 4g or less. At daily doses exceeding 4g for more than three days the manufacturer recommends following bleeding times as a screen for platelet inhibition. The revised insert also states that patients given moxalactam should receive 10mg of vitamin K weekly. The adoption of these recommendations is crucial to reducing the severe bleeding complications caused by moxalactam.

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Lumbar Laminectomy

Experience in 228 Consecutive Cases

MARLEN S. STREFLING, M.D.* and DAVID A. NESS, M.D.†

A series of patients (n = 228) undergoing surgery for low back pain with sciatica were followed longitudinally and rated for outcome one year after operation. Good or excellent outcomes were found in 78 percent. Poorer results were seen in patients with previous low back surgery and in those with an intraoperative diagnosis of nerve rootlet scarring. Participation in workman's compensation litigation also was associated with poor outcomes.

PRIOR TO THE 1930s only conservative means were available for treating the syndrome of low back pain with sciatica. This situation changed in 1934 with the description of a surgical treatment for ruptured intervertebral discs by Barr and Mixter.¹ Much has been published since then describing benefit from surgical treatment in 75% to 95% of patients.²⁻⁹ Analyses of failed surgical treatment have provided further useful information on selection of candidates likely to achieve successful surgical outcomes.¹⁰⁻¹² Clinicians have come to recognize multiple etiologies for this syndrome, most of which will respond to conservative measures, with surgery being reserved for those with intractable sciatica. A group of patients remains, however, who fail to respond to either treatment mode, raising questions of whether treatment has been inadequate, inappropriate, or whether, as some have suggested, psychological and compensation factors play a role in outcome.^{6,11,13,14}

This study attempted to address those questions by analyzing outcomes among a group of patients treated over a five and one-half year period by a single surgeon in private community practice. Functional status at one year after surgery and period of time to return to work were defined as two measurements of outcome. Relationships were then examined between these two outcome measurements and several pre-, intra-, and postoperative variables to identify any such factors that might have prognostic significance and help to predict patients unlikely to benefit from surgical treatment.

Materials and Methods

Subject selection criteria and data items to be recorded were established prospectively. All patients undergoing lumbar back surgery during the period from January 1975 through July 1980 were then followed longitudinally after operation. The preoperative diagnosis in all cases was lumbar disc disease or spinal stenosis (as defined by complete or near complete block on myelogram). All patients had failed to improve with varying periods of conservative management including bed rest and/or flexion body casts, anti-inflammatory medications, physical measures such as heat and traction, and in some cases epidural steroid injections. Preoperative evaluation in all cases included thorough physical examination, lumbosacral spine films, and myelograms. Most patients had electromyograms as well. In many cases of equivocal myelogram findings CT scans and/or discograms were performed.

The surgical procedure used was partial hemilaminectomy, with hemilaminectomy or laminectomy used when wider exposure or decompression were required. A single surgeon performed the operations. Patients operated for fusion only were excluded for the study. Operative findings were categorized as follows: ruptured disc, bulging disc, spinal stenosis, degenerative bony spondylosis other than frank spinal stenosis, and fibrous entrapment of the nerve root (scarring).

Using information obtained from the medical record, an outcome rating of excellent, good, fair, or poor based on functional status and symptomatology one year after operation was assigned each patient independent of the operator (Table 1). This one-year outcome rating was then analyzed in relation to patient age, sex, occupation, history of previous back surgery, operative findings, and participation in workman's compensation litigation, to determine

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whether the outcome was affected by these independent variables.

Time to return to work was regarded as a second outcome measure and was analyzed in relation to occupation and participation in workman's compensation litigation.

Statistical significance of differences in qualitative data was calculated using chi square tests with Yate's correction. Quantitative data was analyzed using the Student t test. The adjusted contingency coefficient (C_{adj}) was used to measure correlation for nominal data.

Results

Subjects

The study group consisted of 229 patients who underwent a total of 240 operations during the study period. Twelve cases (5%) were lost to follow-up and

Operative Findings and Complications

Table 2 summarizes intraoperative findings. A marked difference in operative findings appeared between the primary laminectomy group and the repeat

TABLE 2

Operative Findings During Laminectomy

Operative Finding	All (n = 228)	Primary Cases (n = 196)	Repeat Cases (n = 32)
Ruptured disc	26%	29%	9%
Bulging disc	40%	46%	6%
Spinal stenosis	7%	7%	6%
Bony spondylosis	11%	11%	12.5%
Scar	2.5%	0%	19%
Disc disease and scar or spondylosis or both	9%	5%	34.5%
Scar and spondylosis	2%	.5%	12.5%
Other*	1.5%	1.5%	0%

*Two cases, no lesion found; one case, a neurofibroma was found causing symptoms.

TABLE 1

One-year Outcomes After Laminectomy

Outcome	Total (n = 228)	Primary Cases (n = 196)	Repeat Cases (n = 32)
Excellent			
Asymptomatic, no restrictions	47%	51%	25%
Same job			
Good			
Minor symptoms with strenuous activities	31%	31%	31%
May or may not have changed occupations			
Fair			
Occasional episodes of severe pain	18%	17%	22%
Otherwise minor discomfort			
Occupation changed			
Poor			
Severe pain most of the time	5%	2%	22%
Essentially incapacitated			

had to be excluded from the study, leaving 228 cases for analysis.

The mean age of subjects was 42 with a range of 16 to 83 years. Fifty-three percent were male and 47% female. A total of 193 (85%) were employed, 96 in white collar and 97 in blue collar occupations. Thirty-two cases (14%) involved patients who had undergone previous low back surgery and were classified as repeats, leaving 196 primary laminectomies. Mean period of conservative management was 11 months, with a range of 1 week to 11 years.

One-Year Outcomes

Table 1 shows one-year outcome ratings. Overall, 47% had excellent results, 31% good, 17% fair, and 5% poor. Patient age, sex, and occupation bore no statistically significant relationship to these one-year outcomes. Patients undergoing a first laminectomy had better one-year outcomes than repeat cases ($p < .01$).

group. Among the primary laminectomy patients, 82% had only the lesion suspected preoperatively (i.e. ruptured or bulging disc or spinal stenosis), whereas this was true in only 21% of the repeat group.

Three patients failed to fit into any of the five operative categories. Of these exceptions, one patient had a neurofibroma, and in the other two, no lesion was found.

Eight patients (3.5%) developed postoperative complications. There were the three cases of thrombophlebitis, two pulmonary emboli, one spinal fluid leak, one wound hematoma, and one aspiration pneumonia. All patients recovered from these complications without significant long-term morbidity.

Relationship Between Operative Findings and One-Year Outcome

Table 3 presents relationships between intra-

operative findings and one-year outcomes. The subgroup of patients with significant scarring had fewer excellent and more fair and poor outcomes when compared with all other patients ($p < .001$). When cases with scarring were excluded, there was no statistically significant difference in outcomes in patients with single operative findings or in those with any combination of findings. Twenty of the twenty-four patients with scarring present (83%) were patients undergoing repeat laminectomies ($C_{adj} = .82$).

Compensation Claims and Return to Work

Of the patients who were employed prior to surgery, 182 (94%) returned to employment. The mean time to return to work was 3.6 months. A significant difference ($p < .001$) was found between mean time to return to work by those involved in workman's compensation claims (4.9 months) versus those not involved (2.5 months). This difference was most pronounced in those cases with good and excellent one-year outcomes. These data are summarized in Tables

TABLE 3
Operative Findings and One-Year Outcomes

Operative Finding	n	Excellent	Good	Fair	Poor
Ruptured disc	60	56%	28%	12%	3%
Bulging disc	92	49%	33%	16%	2%
Spinal stenosis	16	56%	25%	13%	5%
Bony spondylosis	26	38%	35%	23%	4%
Disc disease plus bony spondylosis	7	29%	43%	14%	14%
All findings with scarring	24	25%	21%	33%	21%
All findings without scarring	201	50%	31%	15%	4%
Other	3	33%	66%	0%	0%

Relationship Between Compensation Claims and One-Year Outcome

Of 193 patients working prior to the time of surgery, 90 (47%) became involved in workman's compensation claims. There was a significant difference in one-year outcomes between workers involved in this compensation litigation and those not involved ($p < .001$). This difference in outcomes remained significant ($p < .001$) even when all repeat cases were excluded from consideration, and an association was present between workman's compensation participation and one-year outcome ($C_{adj} = .48$).

The percentage of patients involved in workman's compensation claims rose steadily in each successive lower outcome group. Among those with excellent one-year outcomes, only 25% were involved. This percentage increased to 52% among patients with good outcomes. Seventy-seven percent of patients with fair outcomes and 100% of those with a poor one-year outcome were involved in the workman's compensation process.

4 and 5.

Among blue collar workers, 63% participated in workman's compensation litigation versus 36% in white collar workers ($p < .01$). No statistically significant difference was found in time to return to work between white collar and blue collar workers.

Eleven patients (6%) never returned to work. All had fair or poor one-year outcomes. Nine were blue collar workers and 10 of the 11 were involved in compensation claims.

Comment

The outcome results in our group were similar to

TABLE 4
Mean Return to Work (in Months) in Workman's Compensation Versus Non-Compensation Cases

Occupation	Workman's Compensation		No Workman's Compensation	
	Mean	SEM*	Mean	SEM*
All	4.9	.59	2.5	.25
White Collar	4.2	.71	2.6	.38
Blue Collar	5.4	.82	2.4	.19

*Standard error of the mean

TABLE 5
One Year Outcome in Workman's Compensation Versus Non-Compensation Cases.

		n	Excellent	Good	Fair	Poor
Primary Laminectomies	Workman's Compensation	70	30%	36%	30%	4%
	No Workman's Compensation	96	64%	29%	7%	0%
All Laminectomies	Workman's Compensation	90	24%	36%	30%	10%
	No Workman's Compensation	103	63%	29%	8%	0%

those in most large follow-up studies of surgical treatment for intractable back pain with sciatica²⁻⁹. Overall, 95% of patients were improved over their preoperative status; 5% remained unchanged or worse. A total of 78% had good or excellent relief of symptoms and return to previous functional status. Our relatively short follow-up period of one year gives a somewhat inflated value for excellent outcomes. One would expect long-term drift from both extreme outcome subgroups toward the middle, a trend borne out in 10- to 20-year follow-up studies^{5,6,9}.

It must be emphasized that the outcome results obtained here were in patients who had failed to show significant improvement with vigorous conservative management. No definite consensus exists as to what constitutes an adequate trial of conservative management, and our study did not address this question. In our group, if the patient had not responded within several weeks through a full progression of conservative measures, surgery was not further delayed. Exception to this management was made in cases with central disc prolapse and/or urgent neurological deficit. In a comparison of conservative and surgical treatment, Hakelius³ has shown that up to 80% of patients managed conservatively will be improved at 6 months. In his study, however, patients with the most severe and intractable symptoms were selected early for surgical treatment. His data additionally showed slower recovery and return to work, more frequent recurrences and work absence, and poorer subjective long-term results in conservatively versus surgically treated patients. Nevertheless, his study points up the natural history of disc disease and the value of the option of ongoing conservative treatment.

The success attainable with conservative management seems more significant when one considers the well-known diminishing returns for surgical intervention in previously operated patients¹⁰⁻¹². In our study, 45% of these repeat cases had only fair or poor outcomes, and two-thirds of all the poor one-year results in the study occurred in repeaters. The percentage of excellent outcomes in this repeat group was much lower than in patients undergoing a first operation.

Intraoperative findings in these repeat cases were of particular interest since all were operated for presumed disc disease (or in 2 cases, spinal stenosis), i.e., a surgically treatable lesion. Yet, only 18 of the 32 repeat patients (56%) actually had the suspected lesion, and of these, half had additional operative findings that might have caused their symptoms.

These results represent a significantly lower diagnostic accuracy rate than in the primary laminectomy group, where 87% had the preoperative diagnosis confirmed by the intraoperative finding. Among repeaters with correct diagnosis and ruptured or bulging disc alone, 80% had good or excellent outcomes. These data underscore both the importance and difficulty of interpreting diagnostic studies in patients who have undergone previous surgery. It remains to be seen whether availability of the newer high resolution CT scanners and more frequent use of discograms will improve diagnostic accuracy in these equivocal cases and preclude unhelpful repeat surgeries.

The association we have noted between an intraoperative finding of scarring and poorer outcome in repeat cases confirms the findings of Finnegan¹¹, who suggests that a relatively pain-free period of one year after initial laminectomy helps distinguish radicular symptoms of recurrent disc disease from those due to scar formation in patients being considered for a second operation. Some effective technique to prevent the development of these postoperative nerve root adhesions would likely improve outcome. Methods such as the free fat graft have been described¹⁵, but no clinical study has been undertaken to document their efficacy.

Although postoperative scarring and diagnostic inaccuracy account for a proportion of poor surgical outcomes, there remain additional patients who were appropriately treated and yet failed to improve. Previous investigators have noted an association between psychologic and compensation factors and this group of non-responders^{6,11,13,15}, however, the relationship between workman's compensation litigation and one-year outcome in our study is still surprising. Theoretically, one might expect similar proportions of compensation claims in each outcome group. Several explanations might be entertained. Perhaps patients unhappy with their operative result involve a prior incident in the workplace, or possibly participation in compensation litigation from the beginning of illness exerts a deleterious effect on outcome. Another possibility might be that patients with good and excellent results are satisfied and not interested in pursuing compensation from employers. It must be emphasized that participation in compensation litigation did not necessarily imply a poor subsequent outcome, nor did its absence signal good or excellent results.

The slower return to work in compensation litigation again suggests some negative effect on patient's recovery. A higher percentage involvement in workman's compensation claims in blue collar workers was not surprising, since, presumably, they

are at higher risk for work injury.

Because low back disorders have potential for a long natural symptomatic course, it seems likely that psychologic and economic factors can play as significant a role in outcome as physical factors. For this reason, some have suggested that preoperative MMPIs be required of all patients¹⁶. Others advocate vocational as well as psychologic profiling for patients being considered for reoperation citing lack of vocational skills as another important predictor of poor outcome. They also note a poor correlation between the physician's preoperative prediction of outcome based on clinical assessment and actual result¹³. This type of information can prove especially useful in equivocal cases.

Although the overall success of surgical treatment of back pain with sciatica is good, there remains substantial room for improvement. Change is desirable not only from the standpoint of reducing patient

suffering and disability, but also from the standpoint of reducing the high cost of treatment failures¹⁷, an area of particular concern to employers, liability carriers, and government organizations. As physicians, we may be able to obtain better outcomes for some patients if we utilize the best diagnostic criteria and testing available to understand the physical lesion as clearly as possible, and, at the same time, recognize the economic and psychologic concomitants of this disease. We should then be able to better recommend the most appropriate treatment. Additionally, patient education in back care and prevention of injury, and straightforward discussion of all treatment factors and risks, including those of a psychologic or economic nature, may serve to heighten patient awareness and foster a further therapeutic effect.

Acknowledgments

With special thanks to Dr. Daniel O'Brien, former Associate Director, Smiley's Point Clinic.

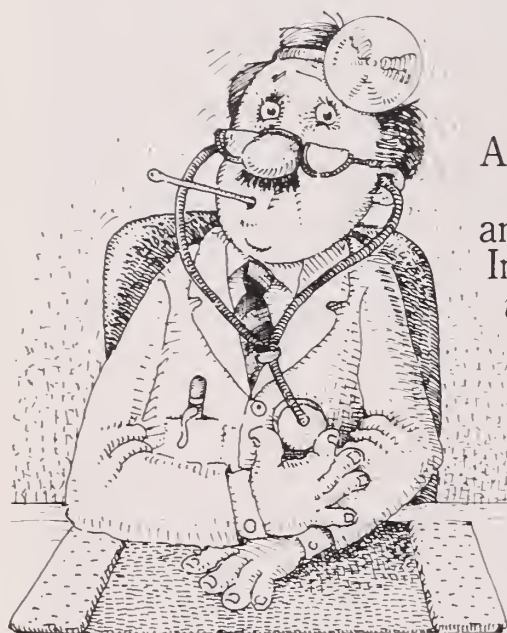
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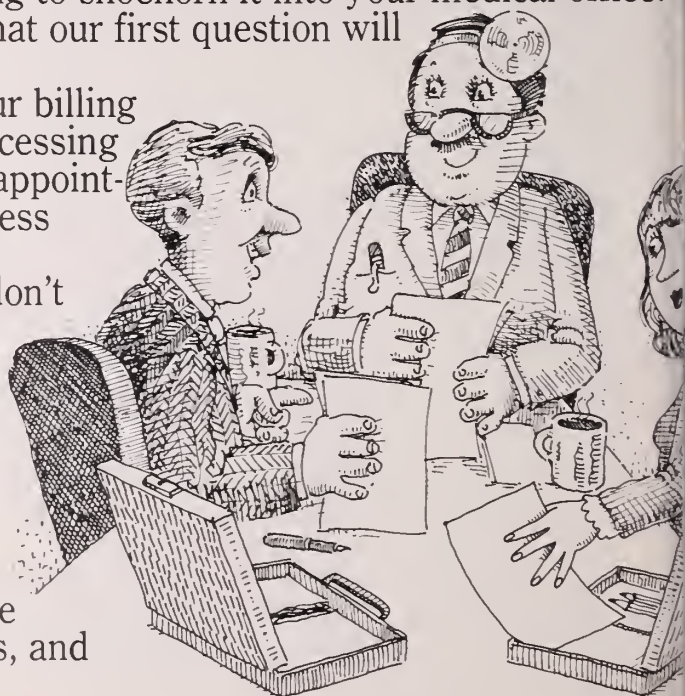
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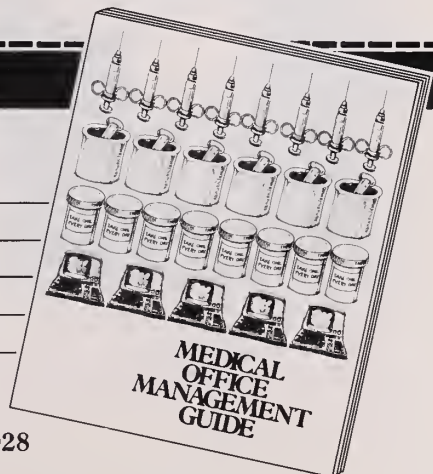
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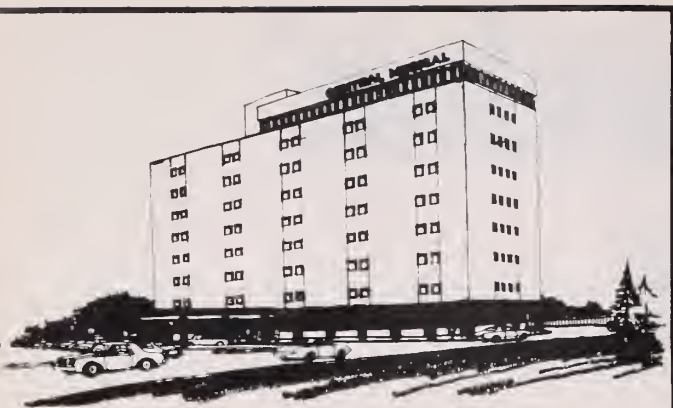


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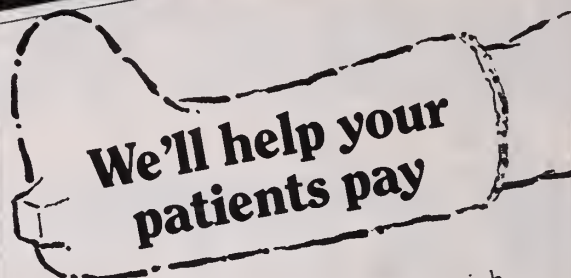
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Intestinal Parasites Identified in Persons in Minnesota, 1961-1980

HENRY BAUER, Ph.D.*, KATHRINE L. GRAM†
JOHN McCULLOUGH, B.A.#, C. DWAYNE MORSE, DR. P.H.‡

The potential public health hazard presented by the large increase in number of persons in Minnesota with intestinal parasites is discussed. From 1961-1980 there were 11,263 intestinal parasites identified in specimens from 9,156 persons. Fifty-five per cent of the parasites, 6,240, were identified during the last five-year period, 1976-1980, in specimens from 4,810 (52.5%) persons. Of these 4,810 persons, Indochinese accounted for 1,913 (39.8%) and children under age 10 for 1,607 (33.4%). Data regarding foreign and domestic travel related to infection with certain parasites are presented. For convenience a chart is included in which are listed essentially all parasites identified in this study, a concise description of steps leading to infection, manifestation of the disease in persons, and drugs recommended for treatment.

A SEARCH OF the Medical Laboratory (ML) records in the Minnesota Department of Health (MDH) was made for persons infected with intestinal parasites in the years 1961 through 1980. This was prompted by, (1) the increasing number of stool specimens found by ML to contain intestinal parasites, (2) reports of high incidence of such infections among Indochinese being re-settled in Minnesota and elsewhere.¹⁻⁴

Between May, 1975 and September, 1981, approximately 31,400 Indochinese refugees came to Minnesota. It is estimated that about 25,000 remained.⁵ In addition, over 5,000 children from Korea, Vietnam, Central America, South America, Thailand, and Hong Kong were placed for adoption in Minnesota during the period 1969 through 1980.⁶

The purpose of this search was to determine: (1) the country in which the person probably became infected, (2) the number of persons infected in each of the years, (3) the kind of intestinal parasite(s) infecting the person, (4) the health district in which the person resided at the time specimen was submitted to ML, and (5) the potential public health hazard.

Materials and Methods

The laboratory data were obtained from routine mailed-in stool specimens or from parasites preserved in a 10% formalin solution. Scotch tape slide prepara-

tions were mailed in for detection of *Enterobius vermicularis*. All specimens were examined in the Section of Microbiology, MDH. A gross examination was made of each stool specimen. These were then examined microscopically, (1) by use of the Ritchie concentration procedure (formalin-ether was replaced in 1980 with formalin-ethyl acetate),⁷ and (2) by use of a sample of concentrated specimen in Dobell's iodine.⁸ The data were summarized into five-year periods, 1961 through 1980. Data such as age, sex, country in which infection probably occurred, and the person's county of residence in Minnesota were abstracted from the records only for the years 1976 through 1980. This was done because during this period the largest number of Indochinese re-settled in Minnesota and the largest number of children were adopted from Korea, Central and South America.

Results

During the 20-year period 1961-1980, 9,156 persons were found to have one or more parasites in their stool specimen, Table 1. For the five-year period 1961-1965 there were 765 (8.4%) infected persons and for each of the succeeding five-year periods the number of infected persons increased. It is important to note that 4,810 (52.5%) were found in the period 1976-1980. Correspondingly the numbers of each kind of parasite, with a few exceptions, increased for each of the five-year periods. There were 11,263 parasites identified during the period 1961-1980; 6,240 (55.4%) were found in the period 1976-1980.

The decrease in number of *Enterobius vermicularis* from 433 (39.1%) in 1961-1965 to 158 (14.3%) in

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INTESTINAL PARASITES — BAUER ET AL.

TABLE I

Results of Examinations, 1961-1980, inclusive

Number of Persons Harboring One or More of Designated Intestinal Parasites

Parasite	By Five-year Periods								Total
	1961-1965		1966-1970		1971-1975		1976-1980		1961-1980
	Number	%	Number	%	Number	%	Number	%	Number
Nematodes (Roundworms)									
<i>Ascaris lumbricoides</i>	49	3.2	63	4.1	504	32.8	922	59.9	1538
<i>Enterobius vermicularis</i>	433	39.1	286	25.8	231	20.8	158	14.3	1108
Hookworm species	36	3.4	87	8.2	93	8.7	848	79.7	1064
<i>Strongyloides stercoralis</i>	2	0.8	3	1.2	2	0.8	243	97.2	250
<i>Trichostrongylus</i> species	1	4.5	8	36.4	6	27.3	7	31.8	22
<i>Trichuris trichiura</i>	63	5.8	161	14.9	270	25.1	584	54.2	1078
Cestodes (Tapeworms)									
<i>Diphyllobothrium latum</i>	4	7.2	11	19.6	19	33.9	22	39.3	56
<i>Dipylidium caninum</i>					1	100.0			1
<i>Hymenolepis nana</i>	13	7.8	12	7.2	60	36.2	81	48.8	166
<i>Taenia</i> species	5	8.2	10	16.4	13	21.3	33	54.1	61
Trematodes (Flukes)									
<i>Clonorchis sinensis</i>			7	1.5	4	0.8	458	97.7	469
<i>Metagonimus yokogawai</i>			1	100.0					1
<i>Schistosoma hematobium</i>	1	100.0							1
<i>Schistosoma mansoni</i>	3	30.0			6	60.0	1	10.0	10
Protozoa									
<i>Dientamoeba fragilis</i>	1	100.0							1
<i>Entamoeba histolytica</i>	9	4.6	8	4.0	67	33.8	114	57.6	198
<i>Giardia lamblia</i>	188	3.6	355	6.8	1927	36.7	2769	52.9	5239
<hr/>									
Total Parasites	808	7.2	1012	9.0	3203	28.4	6240	55.4	11,263
Total Persons	765	8.4	889	9.7	2692	29.4	4810	52.5	9,156
<hr/>									
Persons with 2 parasites	34		70		384		788		1,276
" " 3 "	3		20		62		213		298
" " 4 "	1		3		1		46		51
" " 5 "			1				17		18
" " 6 "							2		2
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* Total persons and % with 2 or more parasites	38	2.3	94	5.7	447	27.2	1066	64.3	1,645

TABLE II

Results of Examinations, 1976-1980, inclusive

Numbers of Persons Harboring One or More of Designated Intestinal Parasites

By Country of Probable Source

Parasite	Africa		Central America		Indo-China		Korea		Mexico		Russia		South America		United States		Other		Total
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number
Nematodes																			
<i>Ascaris lumbricoides</i>	29	3.2	13	1.4	510	55.3	117	12.7	42	4.6	2	0.2	48	5.2	38	4.1	123	13.3	922
<i>Enterobius vermicularis</i>	27	3.2	4	0.5	751	88.6	9	1.1	7	0.8			13	1.5	8	0.9	29	3.4	158
Hookworm species	8	3.3	1	0.4	212	87.3			1	0.4			8	3.3	3	1.2	10	4.1	848
<i>Strongyloides stercoralis</i>	1	14.3			6	85.7													243
<i>Trichostrongylus</i> species	31	5.3	13	2.2	324	55.5	109	18.7	6	1.0			45	7.7	3	0.5	53	9.1	7
<i>Trichuris trichiura</i>																			584
Cestodes																			
<i>Diphyllobothrium latum</i>							1	4.6							14	63.6	7	31.8	22
<i>Hymenolepis nana</i>	3	3.7	5	6.2	22	27.2	18	22.2					16	19.8	9	11.1	8	9.8	81
<i>Taenia</i> species					22	66.7											11	33.3	33
Trematodes																			
<i>Clonorchis sinensis</i>					455	99.4	1	0.2							1	0.2	1	0.2	458
<i>Schistosoma mansoni</i>			1	100.0															1
Protozoa																			
<i>Entamoeba histolytica</i>	15	13.2	1	0.9	38	33.3	2	1.8	6	5.3			16	14.0	12	10.5	24	21.0	114
<i>Giardia lamblia</i>	130	4.7	78	2.8	601	21.7	376	13.6	184	6.6	34	1.2	168	6.1	727	26.3	471	17.0	2769
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Total Parasites	245	3.9	115	1.8	2947	47.2	634	10.2	247	4.0	36	0.6	315	5.1	919	14.7	782	12.5	6240
Total Persons	193	4.0	96	2.0	1913	39.8	488	10.2	226	4.7	35	0.7	245	5.1	910	18.9	704	14.6	4810
<hr/>																			
Persons with 2 parasites	26		11		524		94		16		1		50		9		57		788
" " 3 "	8		4		160		23		1				10				7		213
" " 4 "	2				40		2		1								1		46
" " 5 "					15												1		17
" " 6 "	1				2														2
<hr/>																			
*Total Persons and % with 2 or more parasites	37	3.5	15	1.4	741	69.5	119	11.2	18	1.7	1	0.1	60	5.6	9	0.8	66	6.2	1066

1976-1980 may be attributed to: (1) essentially no scotch tape slide preparations were submitted indicating a reduced number of such infections, (2) *Enterobius vermicularis* infections are lower in persons from tropical (Indochina) than in colder climates.¹⁴

Dientamoeba fragilis was found only once in 20 years. Identification is dependent on the vegetative form of the parasite, present only in fresh unpreserved stool specimens or immediately preserved in polyvinyl alcohol fixative. All specimens in this study, except a few received in 1961-1965, were preserved in formalin solution.

Of the 1,645 persons identified in the period 1961-1980 with two or more parasites in their stool specimens, only 38 (2.3%) were identified in the five-year period 1961-1965. The number of persons with multiple infections increased in each of the succeeding five-year periods to a high of 1,066 (64.8%) in 1976-1980.

Of all the parasites identified from persons from each of the countries and "Other", Table 2, *Giardia lamblia* was most prevalent, except from Indochina where Hookworm species was found more often. Parasites of all types were found more often in specimens from persons from Indochina than from any other country except the United States where more persons were infected with *Enterobius vermicularis*.

Diphyllobothrium latum and *Giardia lamblia*.

The 0-9 age group, Table 3, accounted for the

largest number of infected persons and persons with multiple infections. The types of parasites which predominate in the 0-9 age group are generally different from those which predominate in other age groups. The number of infections in the 40-49, and 50 and over, compared with other age groups are generally lower.

With few exceptions, the sex of a person does not have an effect on their becoming infected. The exceptions are: of 158 *Enterobius vermicularis* 65% were found in specimens from the female, whereas of the 55 tapeworms, *Diphyllobothrium latum* and *Taenia* species, 67% were found in specimens from the male. Also, of the *Entamoeba histolytica* 60% were found in the male. There were 1,066 persons with multiple infections, 55% were male.

Infected persons were identified in every Health District in Minnesota but not in every county, Table IV. In the Northwestern District no infected persons were identified in Clearwater, Lake of the Woods, and Marshall Counties; West Central District, Wilkin County; Southeastern District, Houston County. The Metropolitan Health District had the largest number of infected persons, 3,308 (69%) and they accounted for 4,377 (70%) of the parasites. Hennepin and Ramsey, the two largest counties in the state, both in the Metropolitan District, accounted for most of the infected persons, 51% and 31% respectively.

Discussion

We considered the following reasons to account for

TABLE III
Results of Examinations, 1976-1980, inclusive
Numbers of Persons Harboring One or *More of Designated Intestinal Parasites

	By Age Groups												Total Number		
	0-9 Number %		10-19 Number %		20-29 Number %		30-39 Number %		40-49 Number %		50 & Over Number %			Not Stated Number %	
Nematodes															
<i>Ascaris lumbricoides</i>	396	43.0	151	16.4	156	16.9	74	8.0	35	3.8	47	5.1	63	6.8	922
<i>Enterobius vermicularis</i>	86	54.4	17	10.8	10	6.3	8	5.1	3	1.9	1	0.6	33	20.9	158
Hookworm species	153	18.0	212	25.0	230	27.1	100	11.8	60	7.1	61	7.2	32	3.8	848
<i>Strongyloides stercoralis</i>	68	28.0	70	28.8	47	19.3	32	13.2	10	4.1	9	3.7	7	2.9	243
<i>Trichostrongylus</i> species	1	14.3	1	14.3	2	28.5	2	28.5					1	14.3	7
<i>Trichuris trichiura</i>	254	43.5	144	24.6	85	14.5	40	6.9	23	3.9	19	3.3	19	3.3	584
Cestodes															
<i>Diphyllobothrium latum</i>			2	9.1	5	22.7	1	4.6	4	18.2	3	13.6	7	31.8	22
<i>Hymenolepis nana</i>	51	63.0	13	16.1	11	13.6	4	4.9	1	1.2			1	1.2	81
<i>Taenia</i> species	1	3.0	4	12.1	10	30.3	8	24.2	4	12.1	1	3.0	5	15.2	33
Trematodes															
<i>Clonorchis sinensis</i>	67	14.6	118	25.8	111	24.2	89	19.4	35	7.6	19	4.2	19	4.2	458
<i>Schistosoma mansoni</i>			1	100.0											1
Protozoa															
<i>Entamoeba histolytica</i>	25	21.9	19	16.7	31	27.2	15	13.2	8	7.0	12	10.5	4	3.5	114
<i>Giardia lamblia</i>	1018	36.8	317	11.4	604	21.8	332	12.0	202	7.3	239	8.6	57	2.1	2769
Total Parasites	2120	34.0	1069	17.1	1302	20.9	705	11.3	385	6.1	411	6.6	248	4.0	6240
Total Persons	1607	33.4	702	14.6	1046	21.8	565	11.7	322	6.7	355	7.4	213	4.4	4810
Persons with 2 parasites	314		131		169		78		33		43		20		788
" " 3 "	70		74		32		22		4		5		6		213
" " 4 "	13		18		5		6		2		1		1		46
" " 5 "	5		6		2				4						17
" " 6 "			2												2
*Total persons and % with 2 or more parasites	402	37.7	231	21.7	208	19.5	106	10.0	43	4.0	49	4.6	27	2.5	1066

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TABLE IV
Results of Examinations, 1976-1980, inclusive
Numbers of Persons Harboring One or More of Designated Intestinal Parasites

Residence by Health Districts	Nematodes						Cestodes			Trematodes		Protozoa		Total			
	Ascaris lumbricoides	Enterobius vermicularis	Hookworm species	Strongyloides stercoralis	Trichostrongylus species	Trichuris trichiura	Dipyllobothrium latum	Hymenolepis nana	Taenia species	Clinocochis sinensis	Schistosoma mansoni	Entamoeba histolytica	Giardia lamblia	Total Parasites	Total Persons	Persons with 2 Parasites	Persons with 3 or more
Northeastern	59	47	12	7		29	1		1	7		7	81	251	212	23	8
Northwestern	25	4	18	2	1	7				3		3	74	137	115	15	3
West Central	15	7	5			12				9		3	46	97	77	10	5
Central	65	22	38	14	1	34	2	5	4	23		7	157	372	283	39	21
Metropolitan	585	47	667	176	3	429	18	69	26	373	1	73	1910	4377	3308	586	207
Southwestern	50	12	20	8		31		2		12		7	164	306	261	24	9
South Central	49	3	22	12		18		2	1	6		5	97	215	161	28	11
Southeastern	67	16	61	23	2	22	1	3	1	25		7	200	428	339	60	14
Out of State	7		5	1		2						2	40	57	54	3	0
Total	922	158	848	243	7	584	22	81	33	458	1	114	2769	6240	4810	788	278

Northeastern District Counties: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, Pine, St. Louis.

Northwestern District: Beltrami, Clearwater, Hubbard, Kittson, Lake of Woods, Mahanomen, Marshall, Norman, Pennington, Polk, Red Lake, Roseau.

West Central District: Becker, Big Stone, Clay, Douglas, Grant, Otter Tail, Stevens, Traverse, Wilkin.

Central District: Benton, Cass, Chisago, Crow Wing, Isanti, Kanabec, Mille Lacs, Morrison, Pope, Sherburne, Stearns, Todd, Wadena, Wright.

Metropolitan District: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington.

Southwestern District: Chippewa, Cottonwood, Jackson, Kandiyohi, Lac qui Parle, Lincoln, Lyon, McLeod, Meeker, Murray, Nobles, Pipestone, Redwood, Renville, Rock, Swift, Yellow Medicine.

South Central District: Blue Earth, Brown, Faribault, LeSueur, Martin, Nicollet, Sibley, Waseca, Watonwan.

Southeastern District: Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

the progressive increase in numbers of infected persons and parasites, identified in Minnesota, for each of the five-year periods included in the years 1961-1980.

First, the large number of Indochinese who came to Minnesota during the five-year period 1976-1980 accounted for 1,913 (40%) of the 4,810 persons we found infected with intestinal parasites. These data may represent a small fraction of the estimated 31,400 refugees who came to Minnesota, considering the high incidence of infection reported by others who examined stool specimens from these refugees.^{3,4}

Second, the high per cent of children 1,607 (33%) under age 10, suggests that children placed for adoption in Minnesota during the period 1976-1980 were the second largest number of infected persons. The adoptions were 2,209 children from Korea, 245 from South America, and 59 from Central America.⁵ It may be that these adopted children account for many of the infected persons identified with their country of origin, Table 2, such as Korea, South and Central America.

Third, increased physician awareness of parasitic infections and availability of parasitic identification services at the State and private laboratories may have accounted for the detection of the large number of infected persons.

Fourth, foreign and domestic travel accounted for some of the infections. Of 471 persons with *Giardia* cysts in their stool, 291 (62%) indicated travel in at least one of the 40 foreign countries other than those listed. The travel status of the remaining 180 persons

is unknown. *Giardia* cysts were found in 34 (100%) of the persons who indicated travel in Russia. Of 727 persons listed under United States, 57 (8%) traveled in one or more of 23 states other than Minnesota. It appears that the remaining 670 (92%) persons became infected in Minnesota; there was no indication of travel on their data form accompanying the specimen.

A potential public health hazard is provided by the large increase in the number of persons with intestinal parasites. It is important to note that 82% of the infected persons were identified during the five-year periods, Table 1, 1971-1975 and 1976-1980, compared with 18% identified in the periods 1961-1965 and 1966-1970. Also, during these periods the number of persons with two or more parasites in their stool increased from 8% to 92%. The increase in multiple infections was especially large in 1976-1980; there were two persons with six parasites in their stool. The number of infected persons found in this study combined with the number reported by others in Minnesota^{3,4} increase the total of infected persons who contribute to the potential public health hazard.

However, a potential public health hazard may be reduced in part by a sewage system which prevents eggs or cysts from contaminating the soil or water in which they can incubate and develop into the infective form. In areas where sanitation is poor, *Ascaris*, Hookworm, *Strongyloides*, and *Trichuris* may be transmitted via contaminated soil, *Entamoeba histolytica* cysts via water, and *Giardia* cysts via water and food.

For convenience, Table 5 has been included. Es-

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TABLE V

Disease agent and brief description of its occurrence and steps leading to disease in persons, manifestation and treatment.

Disease in Persons									
Disease Agent	Occurrence	Definitive Host (Vorm in)	Intermediate Host	Person Infected By	Directly Communicable Person to Person	Causative Form	Manifestation	Treatment For Def. Sec. (15)	
Ascaris lumbricoides (Roundworm)	Worldwide especially in tropics with inadequate feces disposal	Man	No	Ingestion of eggs from feces containing infected soil via food, toys, hands etc.	No	Larvae & mature worm	Pneumonitis, especially in children. Eosinophilia, abdominal pain.	Pyrantel pamoate or Mebendazole *Piperazine citrate	
Enterobius vermicularis (Pinworm)	Worldwide, highest in children, school and pre-school age, usually familial. Lower in tropics than in colder climates.	Man	No	Ingestion of eggs from anus via hand to clothing, bedding, food, etc., contaminated with eggs.	Yes, also indirectly through clothing, bedding, food, etc., contaminated with eggs.	Mature worm	Mild to non-specific intestinal disease. Anal itching severe form, variety of manifestations.	Pyrantel pamoate or Mebendazole *Piperazine citrate or Pyriminyl pamoate	
Hookworm species: Necator americanus, Ancylostoma (hookworm), A. ceylanicum	Endemic in tropical & subtropical areas with inadequate feces disposal & where temp. & humidity & soil favor eggs to hatch.	Man, also dogs and cats discharging eggs of A. ceylanicum	No	Penetration of skin (usually feet) by larvae hatched from eggs in feces contaminated soil. Ancylostoma may be acquired by oral route.	No	Larvae & mature worm	Iron deficiency anemia, larva penetrates skin. G.I. symptoms (anemia) with heavy infection in absence of adequate iron intake).	Ancylostoma duodenale: Mebendazole or Pyrantel pamoate. Necator americanus: Pyrantel pamoate or Mebendazole *Thiabendazole	

TABLE V

(3)

TABLE V

(2)

Disease in Persons									
Disease Agent	Occurrence	Definitive Host (Vorm in)	Intermediate Host	Person Infected By	Directly Communicable Person to Person	Causative Form	Manifestation	Treatment For Def. Sec. (15)	
Strongylus stercorarius (Threadworm)	Throughout tropical and temperate areas. May be endemic or epidemic in institutions if poor personal hygiene	Man, possibly dogs.	No	External, like hookworm. Internal infection via copro-antigenic life cycle in host. Perianal infection possible.	Yes	Larvae & mature worm	Dermatitis, larvae penetrate skin. G.I. symptoms (anemia) with heavy infection in absence of adequate iron intake).	Thiabendazole	
Trichostrongylus axei (Whipworm)	Cosmopolitan, especially in warm moist regions.	Man	No	Ingestion of embryonated eggs from contaminated soil and vegetables.	No	Mature worm	Often asymptomatic. Heavy infection, bloody stool & diarrhea. Rectal prolapse may occur.	Mebendazole	
Diphyllobothrium latum (Fish tapeworm)	Endemic in Scandinavia, in temperate zone. In fish from midwestern & Canadian lakes	Man, also dogs, bears, and other fish-eating mammals	Water, copepods, fish	Eating raw or partially cooked fish containing larval worm	No	Mature worm	Symptoms common: trivial or abdominal. Few patients with B-12 deficiency, anemia, diarrhea, obstruction & toxic symptoms.	Niclosamide Paromomycin	

TABLE V

(4)

Disease in Persons									
Disease Agent	Occurrence	Definitive Host (Vorm in)	Intermediate Host	Person Infected By	Directly Communicable Person to Person	Causative Form	Manifestation	Treatment For Def. Sec. (15)	
Taenia saginata (beef tapeworm)	Worldwide wherever beef is eaten raw or lightly cooked.	Man	Larval stage in cattle	Ingestion of raw or partially cooked beef containing larval worms	No	Mature worm	Variable may include anorexia, loss of weight, abdominal pain, digestive disturbance	Niclosamide *Paromomycin	
Taenia solium (pork tapeworm)	Worldwide wherever pork is eaten raw or lightly cooked	Man	Hogs	Ingestion of raw or partially cooked pork containing larval worm	No	Mature worm	Same as T. saginata	Niclosamide *Paromomycin	
			Man	Ingestion of worm eggs in feces directly or indirectly via contaminated food or water	Yes	Larva cysticercus	Cysticercosis may be severe when localized in eye, CNS or heart	Surgical removal	
Hymenolepis nana (dwarf tapeworm)	Worldwide common tapeworm of S.E. USA	Man	Rodents	Ingestion of worm eggs from feces of infected person via fingers, food, etc.	Yes	Mature worm	Varies from no detectable to profuse symptoms, diarrhea, vomiting, pruritus of nose and anus	Niclosamide *Paromomycin	

Disease in Persons									
Disease Agent	Occurrence	Definitive Host (Vorm in)	Intermediate Host	Person Infected By	Directly Communicable Person to Person	Causative Form	Manifestation	Treatment For Def. Sec. (15)	
Clonorchis sinensis (Asianic liver fluke)	Endemic in S.E. China, Taiwan, South Korea, Vietnam; limited to areas with appropriate snail, not found in U.S.	Man, cat, dog, monkey and other animals	Two hosts in fresh water; 1st part of life cycle in certain snail, 2nd in fish	Ingestion of raw, dried, pickled, or partially cooked fresh water fish	No	Developing and mature fluke	Disease of bile ducts, abdominal pressure, enlargement of liver, icterus & edema	Chloroquine phosphate	
Entamoeba histolytica	Worldwide	Man	No	Epidemic mainly by water containing cysts from feces of infected person	Yes	Trophozoite	Intestinal; varies from acute dysentery to mild abdominal discomfort with diarrhea containing blood & mucus. Also, abscess of liver, lung or brain may occur. Dilatation of perianal area may also occur.	Intestinal: Symptomatic: Metronidazole plus Diloxanide. Asymptomatic: Diloxanide or Paromomycin. For liver abscess, etc. See Med. Letter (15)	
Giardia lamblia	Worldwide	Man; possibly domestic animals	No	Ingestion of water or food contaminated with cysts from feces of infected person	Yes	Trophozoite	Asymptomatic to variety of intestinal symptoms, diarrhea, etc.	Quinacrine HCL. Furazolidone or Metronidazole	

* Alternative drug.

entially all of the parasites identified in this study are listed with a concise description of steps leading to infection, manifestation of the disease in persons,¹⁴ and drugs recommended for treatment.¹⁵ The Table shows that *Enterobius vermicularis*, *Taenia solium*, *Hymenolepis nana*, *Entamoeba histolytica*, and *Giardia lamblia*, can be transmitted directly to persons via the feces, fingers, food, fomite route. There are numerous reports of this mode of transmission of *Giardia* in day care centers, mental institutions, and among male homosexuals. An outbreak of *Giardia* infection among school employees was traced to salmon salad, contaminated with the preparer's feces or feces from her 12-month-old grandson whom she diapered prior to preparing the salad. Both had *Giardia* in their feces.⁹ Protozoan infections pose a greater potential health risk than other parasites because the cyst stage of these parasites is infectious the moment feces are passed. Some parasites can reinfect and complete their life cycle in the host, building up the parasite load of the infected person to the point of overt manifestation of the disease. Accordingly, personal hygiene becomes an important part of reducing a potential public health problem.

Children are vulnerable to infection and perhaps one of the major disseminators of intestinal parasites, especially those which are directly communicable person to person. Their personal hygiene is limited and difficult to control. Our data show there were more infections in the 0-9 age group than any other group. With few exceptions, those parasites which are directly communicable were most numerous in children in this age group.

Williams et al.¹⁰ reported in spite of a high level of sanitation in the United States, pinworms are particularly prevalent and *Ascaris* infections occur especially in the Southeast. In a study conducted in 1972 *Ascaris* was found in 10% and *Trichuris* in 8% of 146 children in 64 urban and rural lower income families. Pinworms were present in 20% of 78 children. Familial clustering of *Ascaris* and *Trichuris* carriers was the outstanding finding in their study. Eighty-two percent of siblings of children with *Ascaris* also had *Ascaris* infection. They state that optimal manage-

ment of Ascariasis should include examination and/or treatment of siblings for *Ascaris*.

Surveys conducted among immigrants indicate some parasitic infections do not abate quickly. The prevalence of Hookworm infection, among Puerto Rican born persons residing in Chicago, did not decline significantly until after two to three years residence in the continental United States.¹¹ In a study of school children of Latin origin,¹² the prevalence of parasitic infection after one year in the continental United States was 88%, while after three to five years the rate decreased to 78%.

The symptoms of an acute intestinal parasite infection are recognized and treated by the practicing physician whereas asymptomatic infected persons generally are not recognized. Both symptomatic and asymptomatic persons, depending on the life cycle of the infective parasite, present a potential public health problem. Drugs for the treatment of intestinal parasites, such as *Giardia*, may reduce the parasite load and eliminate the clinical symptoms but some patients continue to pass cysts or eggs in their stools. Persons who become infected with or without symptoms, represent a public health failure.

Faust et al.¹³ suggests the practicing physician participate in the control of parasites infections like he does in the control of communicable bacterial and viral diseases. He can contribute in the following ways: (1) the detection, accurate diagnosis and evaluation of the clinical importance of the disease in the patient; (2) adequate treatment of the patient; (3) search for, and treatment of other cases in the patient's family; (4) determination, if possible, of the source of infection, reporting it promptly to health officials; (5) advice to patients and their families as to how they can avoid further exposure; (6) support and cooperation in community preventive measures, and (7) education of patients in ways of utilizing and strengthening local health departments.

Acknowledgments

Laboratory examinations were performed by: Margaret Miller, B.S., Mary Alice McMonigal, B.S., and others in the Section of Microbiology, Division of Medical Laboratories, Minnesota Department of Health.

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1984 MMA Annual Meeting

Radisson South Hotel

Wednesday, May 9

- 10:30 a.m. — Hospital Medical Staff Section
- 2:00 p.m. — HMSS Reference Committees
Hospital Medical Staff Section — Session II

Thursday, May 10

- 7:00 a.m. — MINNPAC ANNUAL MEETING
- 8:00 a.m. — Exhibits
- 8:00 a.m. — Art Show
- 8:30 a.m. — Scientific Program
- 8:30 a.m. — Socio-Economic Program
- 12:00 Noon — Luncheon (Hosted by MINNPAC)
- 4:00 p.m. — Exhibitors Wine & Cheese Reception
- 6:30 p.m. — President's Reception and Banquet

Friday, May 11

- 7:30 a.m. (Tentative) — County Society Caucuses
- 8:00 a.m. — Exhibits
- 8:00 a.m. — Art Show
- 8:30 a.m. — Scientific Program
- 9:30 a.m. — House of Delegates
- 12:30 a.m. — Lunch (with Exhibitors)
- 12:30 p.m. — Specialty Society Caucuses
- 1:30 p.m. — Tax, Corporate Benefits
& Personal Financial Planning Program
- 2:00 p.m. — Reference Committees
- 2:00 p.m. — Practical Management Program
- 4:30 p.m. — MMIE ANNUAL MEETING

Saturday, May 12

- 10:00 a.m. — (Tentative) — County Society Caucuses
- 1:00 p.m. — House of Delegates

Emphysema

Era of Laennec; Era of the Cigarette

RUTH J. MANN, B.S.* and FRANK D. MANN, M.D., Ph.D.†

The descriptions of emphysema by Laennec in 1819 and by subsequent investigators in the 19th century did not include the anatomic type now designated as centrilobular emphysema. Only more recently has this type of emphysema become prevalent; the change in the pattern of emphysema is probably related to cigarette smoking.

R.T.H. LAENNEC, the inventor of the stethoscope, was usually not aggressive in asserting claims to priority of discovery. He was by nature modest and could well afford to be so, in view of the unrivalled magnitude of his contribution to the clinical diagnosis and pathology of diseases of the chest.¹ One condition for which he did in 1819 claim priority of discovery was termed by him "vesicular emphysema."² This disease "consists simply in the dilatation of the air cells," results from "an extensive and severe dry catarrh," "and affects nearly all the subjects of asthma."³ From the autopsy findings of 4 illustrative cases, Laennec described the emphysematous lung of asthma or chronic bronchitis as well as has subsequently been done. The enlarged air sacs on the surface reminded Laennec of the reptilian lung. The emphysematous lung is voluminous and fails to collapse when removed from the chest. Such a lung on handling feels like a pillow filled with down and retains an imprint when pressed.³ These characteristic findings, which are due to retention of air in the lung, have long been useful to pathologists, as asthmatics may sometimes die unexpectedly in an acute attack and may come to autopsy without their medical history being known.

In 1835, P. Ch. Louis reported autopsies of 42 cases of pulmonary emphysema, essentially confirmed Laennec's findings and emphasized that the condition was reasonably common.⁴

During the 19th century a substantial literature on emphysema accumulated; this has been thoroughly reviewed by Rosenblatt.⁵ Some isolated anatomic observations of emphysema prior to Laennec's work were noted, but Rosenblatt credits Laennec with the establishment of emphysema as a disease entity, as do most of the authors reviewed. Also most of those authors are basically in agreement with Laennec as to

the pathology and pathogenesis of emphysema.

The first edition of Osler's "Principles and Practice of Medicine" in 1892⁶ included under the heading of "hypertrophic emphysema" much of Laennec's description of vesicular emphysema, giving appropriate credit to Laennec. Whereas the surface of the emphysematous lung reminded Laennec of the reptilian lung, Osler compared it to the lung of a frog. Perpetuated for subsequent authors was Laennec's imagery of a lung handling like a down filled pillow. Osler recognized another type, "atrophic emphysema" in which the lungs are small rather than voluminous and which occurs only in old age. In the 1914 edition of this famous textbook the Laennec-Osler description of the emphysematous lung is essentially repeated.⁷

Thus it may be said that throughout the 19th century the concept of emphysema was essentially that of Laennec. Modern authorities^{8,9} agree that the basic abnormality in asthma is excessive responsiveness of the trachea and bronchi to various stimuli, allergic or other. Due to constriction of the respiratory tract, air is retained on expiration and dilatation of the alveoli results, the original reasoning of Laennec. The same mechanism could be invoked in the absence of acute attacks diagnosable as asthma in the case of obstruction of expiration due to chronic bronchitis, but here one enters an area of much controversy. Ignoring the controversy, objective pathologic studies have demonstrated in the second half of the 20th century a pattern of emphysema very different from that described by Laennec and other 19th century investigators.

In 1976 Anderson and Foraker published a lucidly written monograph entitled "Pathology of Disruptive Pulmonary Emphysema;"¹⁰ the extensive studies of these researchers as well as many others are reviewed. Disruptive pulmonary emphysema means destruction of alveolar walls by inflammation, not merely dilatation of alveoli. When the inflammatory

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disruption is associated with inhalation of an injurious substance there results a pattern of emphysema designated as centrilobular. Those alveoli adjacent to the respiratory bronchiole are first affected, while the peripheral portions of the pulmonary lobule are initially spared, presumably because of dilution of the injurious substance. Paper mounted sections of suitably fixed whole lungs of cases of centrilobular emphysema show a characteristic "Swiss Cheese" pattern, the centers of the lobules appearing as holes. In the contrasting pattern of panlobular emphysema all portions of the lobule are affected approximately equally. As one might expect, the distinction is sometimes obscured by the presence of mixed types but in many cases the difference is clear-cut. The principal injurious inhalent involved in the etiology of centrilobular emphysema appears to be cigarette smoke.

Lungs showing this distinctive pattern of emphysema are found almost exclusively in heavy smokers of cigarettes. The converse is not true; smokers may develop panlobular emphysema. One might reason that this duality is not surprising since cigarette smoke may act as a bronchial irritant in addition to being injurious to alveoli.

To demonstrate clearly the lobular distribution of emphysema modern researchers employ techniques of lung sectioning which were not practiced by 19th century pathologists. However, centrilobular emphysema shows a gross difference from panlobular emphysema which should be evident to any pathologist, namely a striking predilection for the upper pulmonary lobes. In advanced centrilobular emphysema the pulmonary tissue of the entire upper lobes is virtually destroyed, being converted to large empty spaces traversed by fibrous trabeculae. The lower lobes while severely damaged are affected much less. This striking difference between the upper and lower portions of the lungs was notably absent in the careful pathologic descriptions of emphysema recorded before the era of the cigarette.

Rokitansky, the great pioneer pathologist of Vienna, was keenly interested in emphysema.¹¹ He wrote that if Laennec had contributed nothing but his description of emphysema this would have been sufficient to ensure his immortality. Rokitansky emphasized, as had Louis⁴, the predilection of emphysema for the margins of the lungs. While the upper lobes might be predominantly involved, e.g. in cases of paralysis of the diaphragm, this predilection applied only to the anterior margins of the upper lobes. Massive destruction of the central portions of the upper lobes, centrilobular emphysema, was not recorded by Rokitansky in his monumental obser-

vations based on many thousands of autopsies. This distressing picture is now common enough. One of us (FDM) has had the duty of recording it in many autopsies; a history of heavy cigarette smoking was an invariable feature of these cases. In routine autopsies of such cases it is usually difficult to remove intact the entire upper lobes due to dense pleural adhesions. The upper lobes in such autopsy specimens of centrilobular emphysema do not resemble the down-filled pillow in Laennec's classic description; these pulmonary fragments as removed have more the configuration of cobwebs.

Anderson and Foraker have attempted to explain the contrasting predilection of centrilobular emphysema for the upper lobes. They carried out simulated smoking experiments with cadaver lungs; the hot cigarette smoke consistently rose to the upper parts of the lungs. These researchers also succeeded in producing emphysema in dogs by chronic exposure to cigarette smoke. Anderson and Foraker did not claim that their experimental evidence is conclusive. But the constant association of centrilobular emphysema with heavy cigarette smoking and the striking predilection of this form of emphysema for the upper pulmonary lobes are demonstrated facts.

It must be noted that by no means all heavy cigarette smokers develop severe emphysema. Important factors of individual resistance and susceptibility must be operating but have not yet been elucidated except for the well-known homozygous antitrypsin deficiency. It is also well known that adding the factor of smoking in individuals with this strong hereditary susceptibility to emphysema greatly accelerates its lethal outcome.

If it is felt that the striking picture of gross destruction of the upper pulmonary lobes by centrilobular emphysema could have been missed by Rokitansky and by Osler, further evidence that this is a newly prevalent lesion is provided by the life long observations of one of the last great classic anatomic pathologists, Prof. E.T. Bell of the University of Minnesota.¹² We reviewed the four editions of Bell's "Textbook of Pathology,"¹³ a concisely written bible of pathologic fact for a generation of Minnesota medical students. During Dr. Bell's long professorial tenure the reports of all autopsies performed in Minneapolis and St. Paul were submitted to the acknowledged master and were faithfully reflected in the distilled wisdom he transmitted to his medical students. This experience totalled 30,000 autopsies in 1940, when one of us (FDM) was in Dr. Bell's class. Dr. Bell did not record centrilobular emphysema, but only the emphysema of asthma, bronchitis and old

age, much as recorded by Osler.

Of course, cigarette smoking was going on during and prior to the 1930's. However, emphysema develops slowly over many years. Louis in 1835 originally pointed out that severe emphysema usually did not appear until old age. Anderson and Foraker as well as other modern researchers have emphasized that the effects of smoking and aging are additive. One may speculate that truly heavy smoking may have been less prevalent in the 1930's because of severe economic constraints. A dime would then buy a substantial hamburger while a pack of cheap cigarettes cost the same. There may sometimes have been a direct choice between smoking and eating. According to the U.S. Department of Agriculture the annual consumption of cigarettes per person 15 years old or older was more than four times as great in 1960 as in 1925.¹⁴ Also, in the absence of antibiotics bronchiectasis and pneumonia were then much more prevalent than at present and may have eliminated some candidates for emphysema at an earlier age. Indeed one of the results of modern pulmonary care with antibiotics and oxygen tanks may be the preservation of heavy smokers long enough to exhibit on the autopsy table the impressive picture of advanced centrilobular emphysema which we do not think was missed by Dr. Bell. As early as 1930 Dr. Bell did observe that the incidence of primary carcinoma of the lung was increasing, and was unable to explain this finding.

At the time when Dr. Bell was greatly puzzled by the striking increase in primary carcinoma of the lung which was showing in his autopsy statistics, a non-medical professor at the same university knew the answer, while physicians did not suspect it. Although his investigation was prompted by personal prejudice, he did attempt to subject his views to scientific testing, although in a field in which he was no expert.

Dr. Anthony Zeleny, Professor of Physics at the University of Minnesota, detested smoking. Every year he gave his sermon on the subject to his students in the introductory course on Electricity; they found the sermon considerably more relaxing than the subject matter of the course, which was one of the hurdles to surmount in order to enter medical school. Professor Zeleny declared that he had maintained contact with the members of his graduating class of 1892 at the University of Minnesota and had recorded their smoking histories and the dates of all demises. In 1937, when one of us (FDM) was among his students, he claimed that the non-smokers showed significantly better survival than the smokers. The data have not survived but from modern medical knowl-

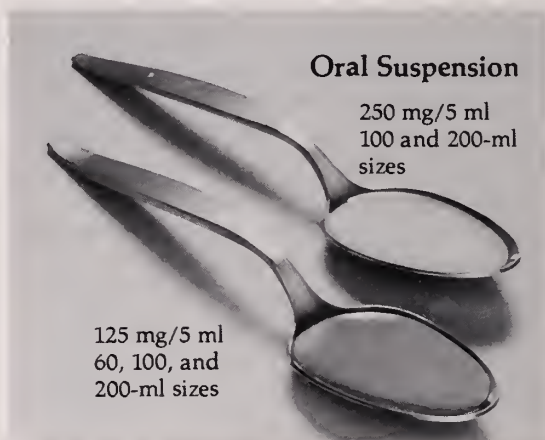
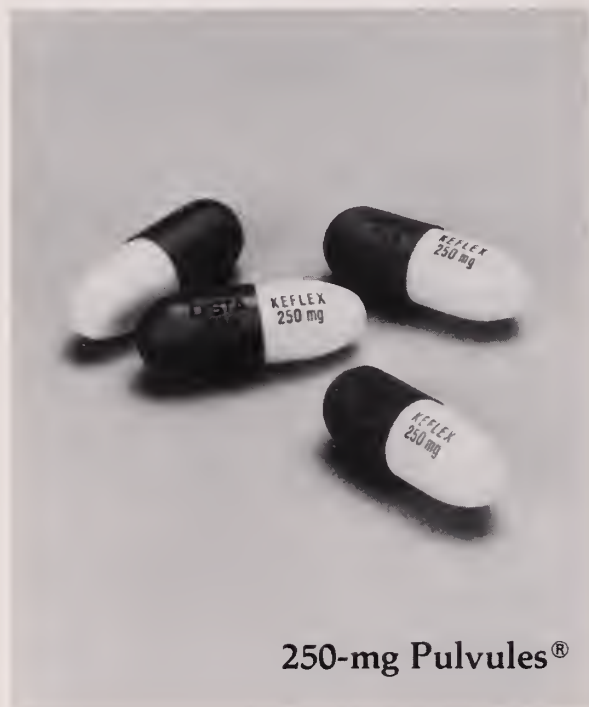
edge of the various adverse effects of smoking, it is quite possible that a significant difference in longevity might have been observed over this period of 45 years.

The Zeleny memorabilia in the archives of the University of Minnesota do include one letter referring to a smaller study which Zeleny conducted on alumni of Dartmouth College.¹⁵ Although Zeleny was a distinguished physicist, his medical views were ridiculed; he was derisively referred to as "St. Anthony." As head of the physics department he was able to forbid students to smoke in the physics building but not his fellow faculty members. According to the student rumor, another senior professor used to blow smoke in Zeleny's direction at faculty meetings. But he was surely right and ahead of the medical profession in seeking evidence of the health hazard of smoking. In the 1930's physicians met in smoke-filled rooms just like businessmen and politicians. At a later time, yet another distinguished Minnesotan, Harold S. Diehl, M.D., longterm dean of the University of Minnesota Medical School, and an authority in the field of public health, emphasized the role of smoking in the etiology of emphysema and other disease.¹⁴

Anderson and Foraker do not ignore the possible role of air pollutants other than cigarette smoke. They record a single case of mild centrilobular emphysema in non-smoker who had a history of 58 years of employment on coal burning locomotives. There is no way to quantitate air pollution in the time of Laennec but in congested cities heated by coal it could not have been absent. In the time of Osler the fog of London had long been legendary and well recognized as a cause of respiratory ailments. Indeed, Macaulay has recorded that in the 17th century the asthmatic King William III found that he could not live in London.¹⁶ When he was criticized for moving his residence away from the seat of government, the King testily replied: "Do you wish to see me dead?" One form of air pollution, that due to the automobile, has roughly paralleled the rise of cigarette smoking. However, non-smokers and smokers are equally exposed and the characteristic pattern of centrilobular emphysema appears virtually restricted to smokers.

The evidence of medical history as well as modern pathology suggests that in its destructive effect on the lung cigarette smoke may be in a class by itself, especially in that it is a pollutant which is voluntarily deeply inhaled. The pattern of emphysema has changed since the time of Laennec and even since the time of Osler; the probable cause of the change is the cigarette.

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Minnesota Medical Association

Cafeteria Plan

Ideally Suited for the Physician's Office

TODD I. FREEMAN, C.P.A.*
Attorney-at-Law

FOR THOSE PHYSICIANS that incorporated their practices prior to 1980, there are fond memories of paying all of their medical and dental bills for their families tax-free. A change in the tax law effective in 1980 required you to offer the same benefit to all employees, thus being exposed to potentially thousands of dollars in reimbursements. Therefore, most medical reimbursement plans were dropped in 1980 or replaced with "insured" plans of questionable validity. As a result, for those physicians in a 50% tax bracket, the cost of their families' uninsured medical and dental care doubled.

A properly designed cafeteria plan can not only resurrect the tax-free medical reimbursement for you, the physician, but it can also provide many other benefits to you and all of your employees with payroll savings instead of added cost.

What is A Cafeteria Plan?

As the name implies, a cafeteria plan is a plan that offers a menu of benefits allowing each participant to make his or her selection. A practice may offer any benefit in a cafeteria plan. These benefits may be cash or other property and may be taxable or nontaxable.

Under a carefully prepared cafeteria plan, the participant will be taxed only on the taxable benefits elected allowing for the tax-free treatment of other benefits. If, however, a cafeteria plan does not meet the requirements under the tax law, then the participants will be taxed, not only on taxable benefits elected, but on all benefits. Therefore, the plan should be designed to meet the tax law requirements which include being written and nondiscriminatory.

Funding of the Plan

Although the traditional benefit plan or program is funded by the employer as a supplement to compensation, it is possible to fund a cafeteria plan with the employees' own salaries. This "salary-reduction" funding eliminates any funding cost to the employer. All participants' salaries would be reduced by the amount of total cafeteria plan benefits avail-

able. This loss in salary may then be replaced by the cafeteria plan benefits. The plan may be designed to be paid pro rata with salary so that neither the employer or employee has any change in pre-tax cash flow.

What Benefits Should Be Offered?

There are a handful of items that, if paid by the employer, are tax-free to the employee. These nontaxable benefits are the focus of the cafeteria plan. Election of these benefits from a qualified cafeteria plan will result in a conversion of otherwise taxable salary to nontaxable cash.

The items that an employer may provide tax-free to an employee through a cafeteria plan are as follows:

- medical and dental insurance
- medical and dental expenses
- disability insurance
- group term life insurance
- dependent and child care
- group legal services
- commuter van pooling
- additional vacation time

As a practical matter the nontaxable benefits provided in a well-designed cafeteria plan are limited to medical, dental and child care expenses and disability, life and health insurance. The other items may be included in a more exotic benefit setting and widespread employee population. In addition, there is a bill before the U.S. House of Representatives that would essentially limit the benefits offered in a cafeteria plan to those items.

Since the focus of the cafeteria plan is on these tax-free items and because the plan is funded out of the participants' salaries, it is desirable to provide cash as a benefit to ensure the receipt of full benefits to all participants. For example, if participant has his salary reduced by \$6,000 but only has \$4,000 of these "tax-favored" expenses, he may only receive \$4,000 tax free. The remaining \$2,000 will then be paid to him as a cash benefit which is taxed identical to salary. In effect, participant's taxable compensation has been reduced \$4,000, the tax-free portion of the cafeteria plan.

An additional feature that may be incorporated in the

*Larkin, Hoffman, Daly and Lindgren, Ltd., Minneapolis.

cafeteria plan would be to include employer-provided health coverage. The result would be to freeze the employer's cost of coverage, shift rising costs to employees and allow larger salary increases.

Advantages of the Cafeteria Plan

The major advantage of the cafeteria plan is the tax benefit realized to the participants. Usually the payment for medical and dental expenses and drugs is made with after-tax dollars. This is the result of the rules limiting the deduction of these items to the excess of 5% over income. Therefore most, if not all, medical-related expenses result in no tax benefit to the taxpayer. However, under the cafeteria plan all of these expenses may be deemed paid by the employer and, therefore, 100% tax-free regardless of income level or whether or not the participant itemizes deductions. Employer-paid dependent and child care may likewise be more beneficial as an exclusion from income rather than a 20% to 30% child care credit.

For those participants electing tax-free benefits and whose salaries fall below the maximum earnings wage base for Social Security taxes, the employer does not pay payroll taxes on the excluded amounts. In addition, to the extent of nontaxable benefits, your practice may also save on unemployment taxes and workmen's compensation premiums.

Since the plan is funded out of participants' salaries and the employer may only benefit from widespread participation, the plan is totally nondiscriminatory. The physicians and the office staff each receive identical total benefits.

The advantages to the employer and employee may be realized on each and every paycheck. Suppose Nancy Nurse earns \$24,000 annual salary and her employer, Dr. Taxwise, P.A., adopts a \$6,000 salary-reduction funded cafeteria plan. If Nancy Nurse has \$4,800 of medical, dental and day care expenses and the

plan pays all benefits pro rata throughout the 24 payroll periods, the cash flow effect of the plan might be as indicated in Table.

It is important to note that the worst possible consequence to Nancy Nurse above is to elect 100% taxable benefits resulting in the identical tax situation as if the plan did not exist.

Tax-free Disability Insurance Proceeds

Question: What do physicians hold more dear than mother, apple pie and the girl they left behind?

Answer: Their disability insurance coverage.

A physician's lucrative livelihood is dependent on his or her ability to perform medical services and, many times, within very narrow specialties. Therefore great care is taken in the design of their disability programs.

The taxation of disability insurance proceeds is determined by who pays the premium. Since payment of the premium by the professional corporation is tax-free to the physician, the proceeds are fully taxable upon disability. If the physician pays his or her own premium with after-tax dollars, the proceeds are tax-free. Since your tax bracket is likely to be lower if disabled and the premium is cheaper on a tax-free basis, most practices pay the premium through the corporation resulting in taxable proceeds if disabled. Some groups go so far as to "bonus out" the premium as a reimbursement at the end of the year if the physician is not disabled to get the best of both worlds. This approach not only would fail to produce tax-free proceeds but could also result in a taxation, plus penalties, on the premium.

An ingeniously designed cafeteria plan can result in tax-free proceeds if disabled with no change in premium cost. The effect to a Dr. Klutz earning \$100,000 with 75% coverage could be as follows:

TABLE				Disabled	Disabled
	Before			Under	Under
	Adopted	After		Current	Cafeteria
Salary	\$1,000	\$ 750	Salary	Employed	Plan
Cafeteria Plan Benefits:			Gross Disability	Program	—
Taxable		50	Proceeds Less:	—	\$75,000
Nontaxable		200	50% — nondisabled		\$75,000
Gross Income	\$1,000	\$1,000	40% — disabled)	50,000	30,000
Less: Withholding (30%)	300	240	Net Spendable Cash for		—0—
FICA (7%)	70	56	Dr. Klutz	\$ 50,000	\$45,000
Net Amount of Paycheck	\$ 630	\$ 704	As depicted above, the effect of tax-free proceeds		\$75,000
Increase in take-home each paycheck		\$ 74	is dramatic. The net amount available for consumption		
Payroll tax savings to Dr. Taxwise, P.A.			to Dr. Klutz and his family under the cafeteria plan is		
each paycheck		\$ 14	two-thirds greater than under the current program and		
Wages reported on W-2	\$24,000	\$19,200	even 50% more than while actively employed. There-		

As depicted above, the effect of tax-free proceeds is dramatic. The net amount available for consumption to Dr. Klutz and his family under the cafeteria plan is two-thirds greater than under the current program and even 50% more than while actively employed. There-

fore it is possible to tremendously enhance your disability program with no change in premium.

Would Your Practice Benefit from A Cafeteria Plan?

Any practice in which there exists an employer-employee relationship could benefit from a cafeteria plan. This relationship is crucial to achieve any tax benefit under the plan. Therefore partners of a partnership, owners of a Subchapter S corporation or unincorporated sole practitioners will not be able to derive a tax benefit from participation. They will, however, benefit as owners of the practice through payroll tax savings.

Therefore the employer and employees can only benefit from the plan. The worst case is a payment of entirely taxable benefits, i.e., cash, which produces the same result as no plan. In addition, the plan can be designed to eliminate administrative costs and fit into any payroll system.

What's the Catch?

There isn't one . . . yet. Since the cafeteria plan statute was adopted in 1978, the Treasury has not yet come out with proposed regulations which means that

it refuses to rule on any plans. It does not have an official position to assert so that no cases have been litigated. Eventually regulations will be proposed and hearings set, etc. But many plans are already in place based on unofficial sources within the Treasury that have long supported this type of plan. The Treasury's news release last summer also confirms this interpretation.

Companies have been adopting salary-reduction cafeteria plans to increase the take-home pay of its employees, realize payroll tax savings and potentially increase employees' disability coverage with little cost and administration and no perceivable downside risk. The sizes of companies adopting this type of plan have ranged from the one-employee corporation to the conglomerate with thousands of employees. The opportunity exists under the current law and business owners as well as physicians owe it to themselves and their employees to pursue it.

This is truly a plan for the physician's health and the tax health of his practice and employees. Contact an experienced and competent benefits attorney for assistance in designing a cafeteria plan for your office.

Author's Note:

After almost six years of silence, the IRS issued a surprise press release on February 10, 1984, seemingly indicating that it will not recognize plans as discussed above. The position stated in the release has no perceivable basis in the tax law. The thousands of companies that have adopted these plans and Congress are very upset with this unofficial position, and much clarification is sure to follow.

Minnesota Medical Association Annual Meeting
May 9-May 12, 1984
Radisson South-Bloomington.

Broncholithiasis — Wedel et al. (Page 140).

1. Kelley, WA: Broncholithiasis — Current Concepts of an Ancient Disease. Postgraduate medicine 66:81, 1979.
2. Vix, VA: Radiographic Manifestations of Broncholithiasis. Diagnostic Radiology 128:295, 1978.

3. Schwarz, J: Complications of the Arrested Histoplasmic complex in JAMA 236:1157, 1975.
4. Faber, LP: The Surgical Implication of Broncholithiasis. J Thorac and Cardiovas Surg 70:779, 1975.

Letters to the Editor

Dear Editor:

Re: Volume 66, Number 11, November 1983. Page 715 — Letter from John W. Wheeler, M.D.

I compliment Dr. Wheeler on his last paragraph, for it is indeed inciteful and enunciates a laudable goal. Even though my practice and his differ widely, I am sure we both understand the historical causes of a certain bias towards "fee for service" in some parts of organized medicine, especially since most members are in "fee for service" settings.

I do take exception to some of Dr. Wheeler's examples. First, his "fee for service arrangements through health insurance indemnity plans offer the consumers the widest choice of providers that minimize barriers to care.", from the report HEALTH CARE COMPETITION AND REGULATION, A SYSTEM IN TRANSITION, does not include the second sentence of that section on Page 29 which states "the option to purchase care on a fee for service basis should be available under a competitive system to foster consumer choice." Also it fails to note the following three sections which are quoted below:

"(d) New health plans in which physicians are at financial risk for treatment decisions made (e.g. prepaid health plans, case manager/primary sponsor programs) are being developed. Physicians, hospitals and other providers should affiliate with health care plans that are consistent with their own practice style and philosophy. (e) To strengthen pluralism in health care system, all health care plans, including those which are publicly funded, should be treated equally under the law. Subsidization which would give some plans an unfair competitive advantage or others should be eliminated. (f) Shifting of costs and prices from one payor to another should be eliminated. Discounts and/or reductions to an established price should reflect only efficiencies in the production of the service (e.g. economies of scale guaranteed payment, reduction of overhead or other indirect costs or income) and should be available to all who qualify." I submit this does add some balance and does indeed speak to the need for a pluralistic approach.

Second, the problem of cost and quality is applied to any provider of service under any payment mechanism in the report. It is true that an HMO could cut quality to conserve costs, but so can IPAs, PPOs, government third party payors and independent practitioners. Third, separating cost of care and receipt of care is indeed a problem and again can apply to any delivery system, albeit to variable degrees.

Some of my Minnesota Medical Association colleagues feel the report is too permissive toward so-called "alternatives" and Dr. Wheeler feels it is too critical of one such alternative. This reminds me of the truism that to escape reality talk only with those who agree with you. Yes "we are all in this together". Our "open-mindedness" may at times be colored by "our own enlightened self-interest" but the Minnesota Medical Association can be the forum for diverse views and can represent physicians in multiple practice modes. All that is needed is physicians willing to talk with each other. My congratulations to Dr. Wheeler for being one of those physicians.

George B. Martin, M.D.
Thief River Falls, Minnesota

LETTERS TO THE EDITOR

Dear Editor:

I appreciate Dr. Martin's congenial comments. In my original letter, those examples which I cited were not intended to represent all of the points at issue and Dr. Martin is correct to supply us with the rest of the story.

His response to the call for a thoughtful dialogue has been echoed in repeated conversations I have had with physicians of differing perspectives and points of view since my letter appeared in November.

As for those others whose narrow Weltanschauung limits their capacity to change, I am reminded of what Goethe once advised us:

"It is always better to say right out what you think without trying to prove anything much: For all our proofs are only variations of our opinions, and the contrary minded listen neither to one nor the other".

John W. Wheeler, M.D.
Associate Medical Director
Group Health, Inc.

Dear Dr. Bell,

I just finished reading your editorial in "Minnesota Medicine" December, 1983.* I am pleased to see that we finally have somebody writing editorials and president's letters from "Minnesota Medicine" who does not automatically take the stands that HMOs are bad and fee-for-service medicine is good. As a participant in providing care for patients both under HMO auspices and under fee-for-service auspices, I feel, as you do, that if physicians are going to do well as we go into the future we must remain unified. It is doubtful that fee-for-service medicine will ever disappear, and it is also doubtful that HMO type coverage will ever care for everybody in the society. As with all things the society evolves and the needs of the society for medical care and payment mechanisms also evolve. One must remain as alert and perceptive to what is going on around one in the society as one is to the clinical signs and symptoms of the patient if one is to avoid trying to stand in the way of inevitable historical trends and consequently get run over by them.

Mark H. Brakke, M.D.
Coon Rapids, Minnesota

*Page 761.

Dear Editors:

I note that in your May 1983 issue you have reprinted a seven-year-old article entitled "Ghosts and the Black Box,"* — and have thereby revived some ghosts that we laid to rest several years ago.

D Phil and M Path were indeed occasionally cited as authors as a consequence of journal editors' decisions to include the authors' degrees in the same type font as the authors' names. But some time ago we taught our *Index Medicus* computer to be skeptical of any name that resembles any of a long list of degrees that we fed into it. When it now encounters such a name, it prints out a query to the effect, "Do you really mean this?" We didn't dare to tell the computer to automatically eliminate such names, lest we eventually receive an irate letter from an author who is really named D Phil, demanding to know why we have failed to credit him. We have already found a genuine M Dent.

As your article mentioned, some journal editors make a practice of including a place name after the name of an author. A Arbor, from Michigan, was indeed once given credit for an article. Regrettably, we have never found an article by that well known Minnesota physician, A Lea.

Clifford A. Bachrach, M.D.
Editor, *Index Medicus*

*Page 317

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program: Primary sponsor: Location: Contact person.

March, 1984

12-14 MN Academy of Family Physicians, Spring Refresher; MN Academy of Family Physicians; AMFAC, Minneapolis; CONTACT: Chari Konerza, Executive Director, MN Academy of Family Physicians, Health Associations Center, 2221 University Avenue S.E., Suite 426, Minneapolis, MN 55414; 612/623-9559.

16-17 Seventh Annual Clinical Update in Practical Cardiology; Minneapolis Heart Institute & Abbott-Northwestern Hospital; Educational Building, Abbott-Northwestern Hospital; CONTACT: 612/874-4300.

17-18 Selected Topics in Nutritional Biochemistry; Stewart Seminars, International Academy of Preventive Medicine and NW Academy of Preventive Medicine; Hyatt Regency, Minneapolis; CONTACT: 303/987-2131.

23-24 Obstetrics Update; St. Paul-Ramsey Medical Center & U of M Medical School, The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

April, 1984

2-3 Annual Ophthalmology Specialty Course; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

4, 5, 6 Advanced Cardiac Life Support Course; North Memorial Medical Center; Minneapolis, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

5-7 Second Annual Interdisciplinary Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza, St. Paul; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

6-7 Eye Enucleation; U of M Medical School; Jackson Hill, U of M, Minneapolis; CONTACT: Bart W. Galle, Ph.D., Interim Director, CME Office, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

6-7 Evaluation and Treatment of Osteoporosis; Mayo Clinic; Lake Region Hospital, Fergus Falls, MN; CONTACT: J. R. Hendel, M.D., 712 So. Cascade, Fergus Falls, MN 56537; 218/736-5475

7 Minnesota Society of Anesthesiologists Spring Scientific Meeting; MN Society of Anesthesiologists; Hilton Inn, Minneapolis; CONTACT: Douglas E. Koehntop, M.D., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8826

12 Advanced Cardiac Life Support Certification; St. Francis Regional Med. Center, Education Dept.; CONTACT: Judy Hoff, 325 W. Fifth Ave., Shakopee, MN 55379; 612/445-2322

12-13 Medical/Legal Issues in the 80's: Institutional Medical Staff Liability and Effective Medical Expert Testimony; St. Paul Ramsey Medical-Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-14 Eating Disorders Update: Anorexia Nervosa & Bulimia; University of Minnesota; Earle Brown Center, U of M; CONTACT: U of M CME, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E. Minneapolis, MN 55455; 612/373-8012.

13-14 Colon and Rectal Diseases; U of M Medical School; Hyatt Regency Hotel; CONTACT: CME, University of Minnesota, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

13 Pediatric Challenges — 12th Annual Symposium for Primary Care Physicians; Minneapolis Children's Health Center; Minneapolis Children's Health Center; CONTACT: James Moore, M.D., Indian Health Board 2495 18th Avenue South, Minneapolis, MN 55404; 612/721-7425

14 Minnesota Society of Clinical Pathologists Spring Meeting MSCP; Marriott Hotel, Bloomington; CONTACT: Eugenia C. Kassai, Director of Continuing Medical Education & Meeting Services, 222 University Avenue S.E., #400, Minneapolis, MN 55414; 612/378-1875

14 Problems in Cardiovascular; The Duluth Clinic, Ltd.; St. Mary Hospital Auditorium; CONTACT: James Brueggemann, M.D., The Duluth Clinic, 400 E. Third Street, Duluth, MN 55805; 218/722-8364.

23-27 Family Practice Review: Update 1984; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293, Mayo Memorial, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

26-27 Pediatric Days; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W. Rochester, MN 55905; 507/284-2085

27-28 Ophthalmic Reviews; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street S.W., Rochester, MN 55905; 507/284-2085.

April 30-May 4 Practice of Internal Medicine — 1984; Mayo Clinic/Mayo Foundation; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

May, 1984

4 MN Surgical Society Meeting; MN Surgical Society; Rochester, MN; CONTACT: Clive Grant, M.D., Mayo Clinic, Rochester, MN 55902; 507/284-2644

4-5 Nuclear Cardiology; Mayo Clinic; Lake Region Hosp., Fergus Falls, MN; CONTACT: J. R. Hendel, M.D., 712 So. Cascade, Fergus Falls, MN 56537; 218/736-5475

4-18 MKSAP VI Review Course; American College of Physicians; Minneapolis; CONTACT: 800/523-1546

9-12 Minnesota Medical Association, Annual Meeting; MMA; Radisson South Hotel, Bloomington; CONTACT: Eugenia C. Kassar, Director, Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

10-12 42nd Annual Course in Allergy and Clinical Immunology; CME Office U of M Medical School; Mayo Memorial Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office, Box 193 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

0 Management of Low Back Pain; Abbott Northwestern Hospital, Minneapolis; CONTACT: Education Dept., Abbott Northwestern Hospital, Mpls., MN 55407 612/874-4300

1 ENT Primary Care: A Workshop; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Dr. Charles Drage, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3180.

4-15 Basic Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189

7-18 Radiology Update; St. Paul Ramsey Medical Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

7-19 Topics and Advances in Pediatrics; Office of CME U of M Medical School; Mayo Memorial, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

0-22 Impact of Modern Perinatal Care on Society — 14th Annual Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bards, Box 50, 420 Delaware St. S.E., Mpls., MN 55455; 2/373-5718

1-23 Bone and Soft Tissue Tumors; American Academy of Orthopedic Surgeons; Kahler Hotel, Rochester; CONTACT: 312/822-0970.

2 Gynecologic Oncology Update, Mayo Memorial Auditorium, U of Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012

3-25 Current Concepts in Radiation Therapy; Office of CME, U of M Medical School; Mayo Memorial Auditorium; U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office U of M Box 3, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

May 30 — June 1 Recent Advances in Laboratory Medicine; Office of CME, U of M Medical School; Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

June 1984

7-8 Clinical Nutrition for Practicing Physicians; St. Paul Ramsey Medical Center; The St. Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

12, 19 & 20 Basic Life Support (CPR) Instructor Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189

13-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

14-15 Dual Disorders: Chemical Dependency & Psychiatric Disorder; Alcohol-Drug Treatment Program, Dept. of Psychiatry, Univ. of MN; L'Hotel Sofitel, Mpls.; CONTACT: Joseph Westermeyer, M.D., Dept. of Psychiatry, U of MN Hosp., Mpls., MN 55455; 612/373-7952

14-16 Management of Pelvic Trauma; American Academy of Orthopaedic Surgeons; AMFAC Hotel, Minneapolis; CONTACT: 312/822-0970.

20-21 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

25-29 Advanced Cardiac Life Support Course; Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

27-29 Real Time Ultrasound in Obstetrics; U of M Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D. Interim Director, CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

July 27 — August 13 Summer Sportsmedicine Conference; North Central Medical Conference; Los Angeles, California; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Interspecialty Council Highlights

Current Activities of the Interspecialty Council

January 1984

DRGs

The Interspecialty Council viewed three video tapes on DRGs (Diagnostic Related Groups), at the last three council meetings. These tapes were produced by the Minnesota Hospital Association. Four hours of discussion, question and answer sessions, and viewing time were given to this important issue.

The first segment of the films was entitled "Overview of Prospective Payment System" and presented historical and developmental views of the DRG classification scheme and the way the system will work. The second segment entitled "Adapting to the DRG Challenge" examined the administrators and clinician responses needed to make the transition to prospective payment, focusing on key management strategies that can be successfully implemented to educate staff and alter practice patterns. The third segment entitled "Clinician Behavior and Hospital Performance" focuses on data gathering to provide performance comparisons to medical staff, emphasizing the educational and behavioral change process to improve overall performance in physician practice patterns.

Each film was followed by an open discussion of the issue with each specialty representative having the opportunity to ask questions of concern, voice optimism or skepticism about the system, look toward the future as the system possibly enfolds physicians, and generally share with other members of the Council the broad range of concerns which have surrounded this issue.

The following motion was approved by the Council for consideration by the MMA Board of Trustees:

The Interspecialty Council has serious concerns about the potential inequities and impact on Quality of Care with the implementation of the DRG system of reimbursement. Therefore, the Interspecialty Council recommends to the Board of Trustees the establishment of an ongoing committee to collect and analyze data on the DRG impact and to explore cooperative efforts with the Minnesota Hospital Association, consumer groups, and the AMA, as well as our state and congressional representatives.

The Board of Trustees will address this issue at their February meeting.

Informed Consent

Informed consent is an issue currently under discussion by the Tort Reform Committee of MMIE (Minnesota Medical Insurance Exchange). This committee was developed to study the area of malpractice. Dr. Ken Dedeker and Libby Lincoln from MMIE addressed the Council, presenting their concern about potential malpractice suits based on informed consent. Distributed to the members was the "Patients and Residents Bill of Rights," passed by the 1983 Legislature and is as follows:

Patients & Residents Bill of Rights

Information about Treatment

Patients and residents shall be given, by their physicians, complete and current information concerning their diagnosis, treatment, alternatives, risks and prognosis as required by the physician's legal duty to disclose. This information shall be in terms and language the patients or residents can reasonably be expected to understand. Patients and residents may be accompanied by a family member or other chosen representative. This information shall include the likely medical or major

INTERSPECIALTY COUNCIL

psychological results of the treatment and its alternatives. In cases where it is medically inadvisable, as documented by the attending physician in a patient's or resident's medical record, the information shall be given to the patient's or resident's guardian or other person designated by the patient or resident as his or her representative. Individuals have the right to refuse this information.

Right to Refuse Care

Competent patients and residents shall have the right to refuse treatment based on the information required in "Right 6 — Information about Treatment." Residents who refuse treatment, medication, or dietary restrictions shall be informed of the likely medical or major psychological results of the refusal, with documentation in the individual medical record. In cases where a patient or resident is incapable of understanding the circumstances but has not been adjudicated incompetent, or when legal requirements limit the right to refuse treatment, the conditions and circumstances shall be fully documented by the attending physician in the patient's or resident's medical record.

The Council is now considering a proposed resolution which would promote optimum quality patient care and control professional liability claims and losses by providing patients with complete and current information regarding their diagnosis, treatment, alternative, risks and prognosis through timely notation in the patient's medical record; and promote physician participation in educational programs regarding informed consent.

Benefit Disclosure

The Council discussed a proposal, initially brought before the House of Delegates in 1983 requesting legislation requiring disclosure of mental health care benefits by all HMO providers and third party payers. The proposal would require disclosure of the total monies spent on health care, the dollars spent by patient diagnosis, and the dollars allocated per provider to patients with various diagnoses as well as the dollars spent on in-patient and out-patient psychiatric and chemical dependency treatment.

Members of the council expressed great concern about measuring the quality of care by dollars expended which would create a definition for "quality of care" having nothing to do with care provided. The Council also discussed other ramifications which would develop from this type of legislation.

Because a conclusion to the problem was not apparent, the council will continue to look at, review and discuss this proposal at future meetings.

If you have any questions concerning the above, please contact your Interspecialty Council representative.

Interspecialty Council Representatives

MN Allergy Society
William Schoenwetter, M.D., 612/927-3091

MN Society of Anesthesiologists
Russell H. Larsen, M.D., 612/373-8826

MN Dermatologic Society
John Stansbury, M.D., 612/339-3095

MN Chapter, American College of Emergency Physicians
James R. Bishop, M.D., 612/924-5000

MN Academy of Family Physicians
John Sutherland, M.D., 612/373-8539

MN Component, American Society of Internal Medicine
Lowell Weber, M.D., 612/333-8883

MN Society of Internal Medicine
Robert Lindell, M.D., (612) 298-8000

MN Chapter, American College of Physicians
James H. Kelly, M.D., 612/252-5131

MN Neurosurgical Society
Burton Onofrio, M.D., 507/284-2611

MN Society of Neurological Sciences
John Gates, M.D., 612/221-3700

Association of Neurologists of Minnesota
Lawrence Schut, M.D., 612/725-6767

MN Obstetrical and Gynecological Society
Charles J. McCarthy, M.D., 612/227-9141

North Central Occupational Medical Association
David Zanick, M.D., 612/726-1771

MN Academy of Ophthalmology & Otolaryngology
Ekrem Gozum, M.D., 612/920-4595 — OTO
James Trautmann, M.D., 507/284-2511 — OPH

INTERSPECIALTY COUNCIL

Interspecialty Council Representatives (continued)

MN Association of Ophthalmology
Raymond Croissant, M.D., 612/927-7138
Minnesota State Orthopedic Society
Joseph Zeleny, M.D., 612/251-4170
MN Society of Clinical Pathologists
Richard W. Anderson, M.D., 612/221-1719
MN Chapter, American Academy of Pediatrics
Lowell W. Barr, M.D., 507/373-1441
MN Physiatrie Society
Herbert Schoening, M.D., (612) 338-2229
MN Society of Plastic Surgeons
William Carter, M.D., 612/925-1765

MN Psychiatric Society
M. J. Martin, M.D., 507/284-2933
MN Radiological Society
William Chandler, M.D., 612/927-4689
MN Chapter, American College of Surgeons
John Culligan, M.D., 612/227-7564
MN Surgical Society
John Sanford, M.D., 218/722-8364
MN Thoracic Society
F. L. Rasp, M.D., 612/333-2156
MN Urological Society
Thomas Love, M.D., 612/224-7543
Robert Christensen, M.D., Chairman, Interspecialty Council
612/445-1305

Echoes from Our Past

"Proper" Names in Medicine

JACK D. KEY, M.A., M.S.*

"When I use a word," Humpty Dumpty said in a rather scornful tone, "it means just what I choose it to mean — neither more nor less." "The question is," said Alice, "whether you can make words mean so many different things."

— Lewis Carroll

There is little one with an unusual cognomen can do about it — having been born, so to speak, to the burden. Coincidence permits those interested in the preternatural world of names ample opportunities to ply their perverse, yet enthralling, pastime. They could for example consider names of physicians listed in the new *AMA Directory of Physicians in the United States* . . . 28th ed. 1982. Many of these seem especially apropos to their profession. Among them are Air, Arch, Arm, Back, Blinks, Blood, Bond, Bone, Born, Bottom, Bowlds, Brain, Brest, Butt, Case, Cheek, Chew, Child, Chin, Collar, Cord, Docktor, Docter, Eye, Fang, Finger, Foote, Grow, Hair, Hand, Hart, Head, Hipp, Jaw, Knee, Lash, Legg, Lens, Lipp, Livers, Lobe, Lung, Marro, Nail, Naval, Nipple, Nose, Palm, Pitt, Recto, Ribbe, Shin, Shoulders, Sidebottom, Skul, Sochat, Sole, Spina, Surgeon, Teet, Thum, Top, Tum, Tung, Verso, and Ward. Some names inspire confidence i.g., Abel, Angel, Blessing, Devine, Fast, Fine, Fix, Free, Good, Heal, Light-foot, Lord, Love, Service, Smart, Strong, Winner, and Wise. Still others have names which might provoke second thoughts like Armbuster, Bash, Blade, Brake, Burns, Carver, Clapp, Coward, Cross, Cutbirth, Cutlip, Cutter, Cutts, Dose, Dye, Earp, Fate, Gamble, Gay, Gore, Graft, Greedy, Gropper, Hurt, Kilar, Lax, Letcher, Meany, Needle, Needler, Needleman, Nutt, Old, Polk, Price, Ricketts, Riddle, Sickley, Skinner, Slaught-ter, Sleeper, Strain, Strange, Thrasher, Thrower, Wager, Weeke, and Wild. One name — Medline — even seems tailored to this age of computer related online biomedical information retrieval systems.

This exercise involving physician names inspired a brief search for unusual combinations on Binder's Titles of rare medical books. A number of interesting possibilities were quickly spotted such as Bell on Ulcers, Bell on the Hand, Burns on the Heart, Pott on the Head, Pott on Fistula in Ano, Dewees on Females, Fox on the Teeth, Freud on Dreams, Home on the Prostate Gland, Hunter on Venereal Diseases, Hunter on the Blood, Hunter on the Teeth, Laennec on the Chest, and Mead on Poisons.

*Librarian, Mayo Clinic, Rochester, Minnesota

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

PSYCHIATRIST Immediate opening for staff psychiatrist at publicly funded Community Mental Health Center serving population of 45,000. Usual outpatient duties with adolescents and adults plus some consultation with area courts, MD, nursing homes, etc. No travel. Center has interdisciplinary staff of 14, including full time psychiatrist; programs include outpatient services, inpatient, EAP, CDOP, Victim Crisis Center, and day care for chronic MI. Salary range \$60-75,000 with excellent benefits including full paid family health insurance, moving allowance, good retirement plan and paid malpractice. Good family town two hours from Minneapolis. Minnesota license required. Please contact Lawrence R. Maier, Ph.D., P.O. Box 396, Austin, MN 55912 or call collect (507) 433-7389. Complete vita and references needed.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

LAND FOR SALE: 40, 80, 140 acre parcels in Carlton County. Road access, high land, wooded, \$200 to \$300 per acre. Write Charlie Gronquist, M.D., 1210 Wilson Avenue, Cloquet, MN 55720, or call at 218-879-4813.

EMERGENCY PHYSICIANS or primary specialists with ER experience: Full time practice opportunities available beginning January, 1984, in Minneapolis/St. Paul at our newest free-standing emergency centers. Admissions and referrals through a major Minneapolis teaching hospital. Excellent salary with opportunity to advance and join a physician partnership which develops, staffs and manages free-standing emergency centers and hospital E.D.'s nationally. Send CV to: Madeleine Shalowitz, M.D., The Flashner Medical Partnership, The Doctors Emergency Officenters, 830 E. Rand Road, Mt. Prospect, IL. 60056.

NEEDED IMMEDIATELY, physicians for General Practice, Internal Medicine specialists and pediatrician for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D. or Noel Collis M.D. at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

GENERAL PEDIATRICIAN: Assume active pediatric practice in 18 member multi-specialty clinic. Contact Mr. Robert Vogel, Administrator, Bloomington-Lake Clinic, 3017 Bloomington Avenue South, Minneapolis, 55407. Telephone 612-721-6511.

(Continued to page 174)

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PSYCHIATRISTS: The Social Security disability program is seeking a psychiatric in-agency consultant. Duties will include assessment of mental impairment claims. It does not involve claimant contact or examination. Employment will be through a contractual arrangement with the State of Minnesota. The physician must be available 10-15 hours/week at our St. Paul office. For further information contact Irene Suddard, Assistant Director for Medical Services, 200 Metro Square, St. Paul, MN 55101. (612) 296-4419

GENERAL SURGEON with vascular training to join two-physician department in multispecialty clinic. Contact Robert M. Vogel, Administrator, Bloomington-Lake Clinic, 3017 Bloomington Avenue South, Minneapolis, Minnesota 55407.

CARDIOLOGIST Grand Forks Clinic, Ltd., seeks experienced Cardiologist to head expanding program. Competitive salary and fringe benefits leading to early full participation. Send C.V. to Arnold Wax, M.D., or call 1-800-437-5373.

SUNNY SOUTHERN ARIZONA, ideal climate, fast-growing community near major recreation areas. Excellent opportunity for family physician to associate in large, well-established practice, superb new facilities. Contact Thad J. Earl, M.D., 302 El Camino Real, Suite 4, Sierra Vista, Arizona 85635. 602-458-8110 or 602-458-7325.

FAMILY PRACTICE PHYSICIANS A large progressive and growing multi-specialty and family practice group has openings for full-time family practice physicians in a satellite and urgent-center location. We are located in a community of 100,000 in the upper Midwest close to a Minnesota resort lake area. Please send curriculum vitae to Personnel Director, Dakota Clinic, Ltd., P.O. Box 6001, Fargo, North Dakota 58108.

FAMILY PRACTITIONERS — Excellent opportunity to work with well established Family Practitioner/General Surgeon, in the beautiful lakes country of Southwest Minnesota. Delightful community of 12,000 with excellent schools and a new 64-bed hospital. Comfortable, friendly lifestyle with good professional support. Marshall Medical Clinic 1104 E. College Drive Marshall, MN 56258.

WISH TO SUBLET 800 square foot furnished, 3 exam room suite with lab room and toilet, in Meadowbrook Medical Building (behind Methodist Hospital) in St. Louis Park. Am practicing at another location, but lease not up until September. Am willing to negotiate. 781-7495

FAMILY PRACTICE — A solo practice with coverage available in Moorhead. Also partnership available in northwestern Minnesota and group practice available in southern Minnesota. Attractive salary or guarantee with benefit package. Hospital located in each community. Practice broad scope of family medicine including obstetrics. For complete practice, hospital and community information, contact Tom Campbell, Fox Hill Associates, 414/785-6500 (collect).

GROUP HEALTH, INC., the midwest's largest and oldest prepaid multispecialty group, seeks associates in ALLERGY, CARDIOLOGY, FAMILY PRACTICE (no ob/gyn), GERIATRICS, and OBSTETRICS/GYNECOLOGY. Must be board certified or eligible. Excellent facilities, comprehensive benefits, highly competitive earnings. Send curriculum vitae to: Paul J. Brat, M.D.; Medical Director, GROUP HEALTH, INC., 2829 University Avenue Southeast, Minneapolis, Minnesota 55414.

ST. LOUIS, MO: HMO seeks Family Practice or Internal Medicine board eligible/certified physicians for its 3 facilities. New, well-equipped locations service 25,000 subscribers. Competitive salary plus incentive bonus. Excellent benefits, some of which are: health, life, disability insurance; 3 weeks paid vacation; paid CME leave; pension plan; etc. Positions are available now and summer of 1984. American-trained physicians preferred. Respond in confidence to: Mike Dixon, 999 Executive Parkway, P.O. Box 27352, St. Louis, MO 63141; 1-800-325-2982.

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INTERNIST-CARDIOLOGIST AND NEUROLOGIST — specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

THE BEMIDJI CLINIC is a 20 doctor multi-specialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary & fringe benefits offered. Currently recruiting for Board Certified Family Physician and Internist, preferably with subspecialty training. Contact D. E. Carlson at (218) 751-1280, Bemidji, MN (218) 243-3139 (Home)

POSITIONS AVAILABLE . . . For qualified physicians in Divisions of Family Practice and Psychiatry — Fergus Falls State Hospital — located in the Heart of Minnesota's 10,000 Lakes, Fergus Falls is a progressive community and provides an excellent health care setting. Consultant staff presently includes 9 family practitioners, 7 psychiatrists, a neurologist, physiatrist, pediatrician, 2 pathologists, and a surgeon — licensed for 206 chemically dependent patients, 135 mentally ill patients, and 256 mentally retarded residents, Fergus Falls State Hospital provides the only adolescent drug and dependency treatment program in the state system. For more information contact — Richard C. Baker, M.D., Medical Director, Fergus Falls State Hospital, Box 157, Fergus Falls, MN 56537 (218) 739-7396.

GENERAL INTERNIST — BC/BE needed immediately to join a ten member multi-specialty group in Southern Minnesota. Fairmont is a progressive city of 13,000 with excellent schools and recreational areas around a chain of five lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact Donald Grangenett, Fairmont Medical Clinic, P.A., Fairmont, Minnesota 56031. (507) 238-4263.

U.S. AIR FORCE MEDICAL CORPS Currently is accepting applications for physicians in the following specialties: Surgery (All Specialties), Obstetrics/Gynecology, Otorhinolaryngology, Anesthesiology, Psychiatry, Orthopedic Surgery. For further information call collect: Lt. Roger Kalonick 612-331-8216.

ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

IMMEDIATE OPENING for primary care physician. Internal Medicine. Midway area of Saint Paul. Contact David Klevan, M.D. at 612-645-0711. 451 North Dunlap, Saint Paul, MN 55104.

FOR SALE: Family practice, office and equipment. Small southern Minnesota town. Reasonable, terms negotiable. Hospital, cooperative colleagues, excellent community. Call 612-388-7584 evenings.

FAMILY PRACTICE PHYSICIANS are being sought for immediate opening in Madison, Minnesota. Practice offers multiple opportunities with experienced medical staff. Financial arrangements negotiable, starting with a guaranteed salary and advancing to partnership if desired. Details may be secured by calling either of the two following individuals collect: Norval M. Westby, M.D. (612) 598-7531 or Richard L. Range, Administrator (612) 598-7556.

PHYSICIAN DESIRES TWO (2) other Doctors to share large office, downtown Minneapolis. Approx. monthly rent, utilities, phone, etc. would be \$700-800. Call: 612-870-8448.

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(Continued on page 176)

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SOUTHERN CALIFORNIA — We are seeking experienced specialists and general practitioners for our facilities in Los Angeles and Orange Counties. Located in close proximity to major teaching centers, we offer the opportunity of continued professional development and rewarding clinical practice in association with 350 full-time physicians. Compensation and benefits are excellent including paid vacation, educational leave, sick leave, and retirement; insurances included are malpractice, life, disability, medical and dental. Send CV to: Professional Placement, INA and Ross Loos Healthplans, 700 N. Brand Blvd., Suite 500, Glendale, CA 91203.

WANTED: Ob-Gyn, family practitioner, pediatrician and internal medicine to join multi-specialty group. One month vacation, hunting, fishing and lake recreation area. Starting salary excellent, many fringe benefits included. Write: MINNESOTA MEDICINE (735), 2221 University Ave. SE, Suite 400, Minneapolis 55414.

FAMILY PRACTICE PHYSICIAN needed by Cook Area Health Services, Inc., Cook, Minnesota. Salary is competitive and negotiable with full-fringe benefit package. Located in the quiet woods and waters of beautiful Lake Vermilion. Call collect: (218) 666-5959 Ext. 38. Write: Cook Area Health Services, Inc. Ashawa Clinic Building, Cook, Minnesota 55723.

STAFF PSYCHIATRIST CMHC has an excellent opportunity for a staff psychiatrist. Must be board eligible. Programs include in-patient, out-patient, education and consultation, specialized services to children, the chronically mentally ill, and the chemically dependent delivered in conjunction with a seasoned team of multi-disciplinary mental health professionals including two part-time psychiatrists. Excellent four-season recreational area. Salary and fringe benefits negotiable. Contact: Donald E. Frees, ACSW, Area Program Director, P.O. Box 646, Bemidji, MN 56601. An Equal Opportunity Employer.

FAMILY PRACTITIONER — Join an active practice in Northern Minnesota. Two young F.P.'s are looking for one or two associates to replace retiring partner. Attractive clinic and 44 bed hospital in a friendly town of 2000. Contact W. Ofstedal, M.D., 218-435-1212, Fosston, Minnesota 56542.

WANTED: Psychiatrist, full or part-time, and GP. Competitive salary with excellent fringe benefits. Contact: Robert W. Schulz, M.D., Medical Director, Moose Lake State Hospital, Moose Lake, MN 55767.

GENERAL SURGEON AND INTERNIST — BC/BE needed immediately to join 10-member Southern Minnesota multi-specialty group. Fairmont is progressive city of 13,000 with excellent schools and recreation around chain of 5 lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact: Donald Grandgenett, Fairmont Medical Clinic, Fairmont, Minnesota 56031, (507) 238-4263.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

PEDIATRICIAN-FAMILY PRACTITIONER for Minnesota Community (located approximately 40 miles from Twin Cities) is seeking Family Practitioner and/or Internist to join present physician. Would prefer permanent full-time but will consider temporary or part-time physician. Call collect 612-286-2123.

EXAM TABLE. HAMILTON. Honey Oak. Like new. stirrups etc. Make offer. (612) 884-7501 3 to 5 P.M.

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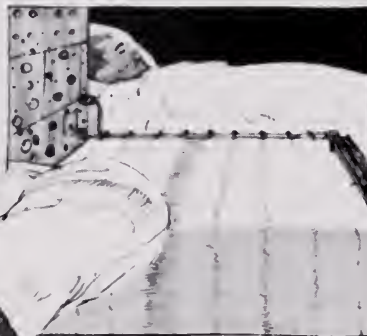
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References: 1. Kales A et al: *J Clin Pharmacol* 17:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. 2. Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 3. Zimmerman AM: *Curr Ther Res* 13:18-22, Jan 1971. 4. Kales A et al: *JAMA* 241:1692-1695, Apr 20, 1979. 5. Kales A, Scharf MB, Kales JD: *Science* 201:1039-1041, Sep 15, 1978. 6. Kales A et al: *Clin Pharmacol Ther* 19:576-583, May 1976. 7. Kales A, Kales JD: *Pharmacol Physicians* 4:1-6, Sep 1970. 8. Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc* 27:541-546, Dec 1979. 9. Dement WC et al: *Behav Med* 5:25-31, Oct 1978. 10. Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 11. Karacan I, Williams RL, Smith JR: The

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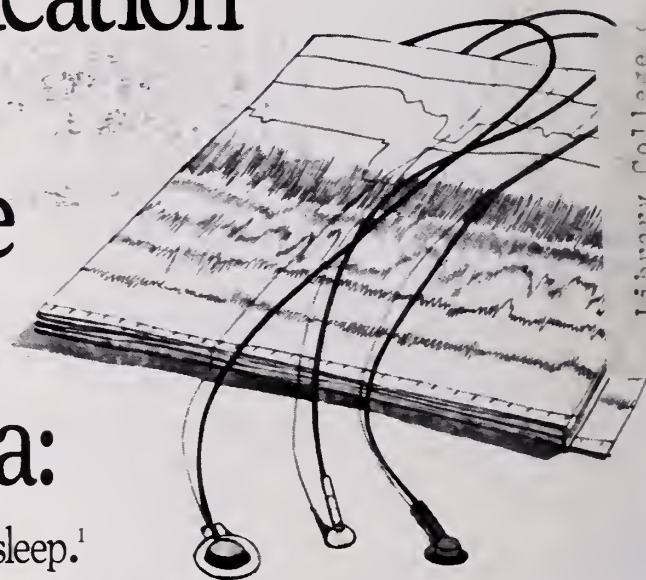
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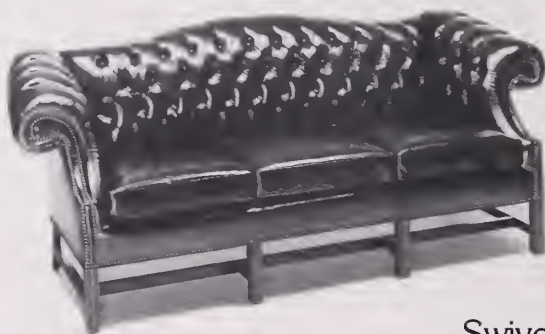
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Annual Subscription — \$18.00. Single copies — \$1.50.
Canadian — \$20.00. Foreign — \$30.00.

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President's Letter



Distant Mirrors

Why is it that in Great Britain there have been fewer malpractice lawsuits in the entire history of the National Health Service than there are in the United States in one year and that British doctors have maintained a favorable public image to a much greater extent than have their U.S. counterparts? This in face of the fact that the British health care system delivers a small fraction of medical service per capita compared to the American system (one-tenth of the coronary artery bypass procedures, one-half of renal dialysis, three to five minutes per office visit).

Why is it that the noble experiment in this country of striving to offer the entirety of medical technology and knowledge to each person regardless of this economic or social circumstance has now been declared a failure, and the medical profession, which has been involved in this task, is held in general disdain and disrepute and is the target of a well orchestrated economic-legal-political assault?

Why have we arbitrarily named the medical care industry, which gives employment — direct or indirectly — to many millions of people a national problem of crisis proportions and speak of its curtailment as a national priority rather than recognizing its existence as being a national accomplishment for which other systems might have to make an adjustment?

Why don't tens of thousands of free phone calls per physician-career at least in part dim the nostalgia for the house call? Why don't people understand that problem-solving frequently can not be done on schedule, that the very qualities of compassion and efforts to listen and communicate, which are highly desirable in physicians, frequently are the cause of waiting room delays.

Finding satisfactory answers to these and similar

questions is difficult, and no one explanation has offered itself to me that totally resolves my own frustrations, but three separate thoughts from widely separate sources have recently come to my attention that I would like to share.

1. Reading the books "A Distant Mirror" by Barbara Tuchman and "The Russians" by Hedrick Smith has helped my own efforts to put our situation in historical and societal perspective.

The former book portrayed a time of near total disruption of society in the fourteenth century when the displacement of a God-centered social philosophy by a human-centered one (the beginnings of humanism) coincided with the death of approximately one-third of all people in Europe and Asia from Bubonic Plague within a few months' time resulting in a social chaos that exceeds our ability to appreciate.

(The children's game of "ring around the rosy" is one trivia of cultural heritage that has come down to us from this time of terror. The "rosy" was the purpuric bubo with a surrounding ecchymotic ring. The "pockets full of posies" were carried as a "nose gay" for relief of the stench of death. The ashes were the fires set to cleanse the air of its miasma. Falling down is self explanatory.)

At this time mankind had literally zero knowledge of disease processes nor how to effectively deal with them, either on a public health basis or for individual patient treatment.

Yet there existed a medical profession. Some useful role was fulfilled by physicians — totally independent of knowledge and effective treatment. Physicians mixed a few practical skills with an assortment of the supernatural and astrology. They were authoritarian and charged too much according to contemporary accounts, but they paid close personal at-

tention to their patient's needs. *This helps us to understand that a physician is in large part a creation of projected needs and feelings of the individual patient and the society in which he/she resides..* This physician-image is thus independent of any ability or lack thereof to alter the biology of disease.

This same century gave birth to humanism, which grew in one mainstream until the time of the American Revolution, and a few decades later the writings of Karl Marx. At this time humanism divided into two mainstreams represented by the American society, which glorifies and indeed worships the priorities of the individual, often at the expense of society as a whole, and the Russian society which *totally* subserviates the needs of the individual to the state.

Smith's book vividly portrays this Soviet society which is of such opposite polarity to ours that it is analogous to looking at a photographic negative. A few items may give the flavor.

- Russians have public apathy and patience of unbelievable degree toward the equally unbelievable frustrations of their daily lives but by contrast have an emotionality in their personal lives and interpersonal relationships that is of such proportion to astound their American observers.
- Russians habitually read their newspapers from back to front and from bottom to top because the real news comes in one or two line fill-ins between the massive stereotype articles of party propaganda. They interpret the latter by inference only. For example, they know that if the media is emphasizing the frequency of air crashes in Europe and America that a Russian airliner has crashed, which they will learn of specifically a few weeks later by word of mouth or by a one line announcement on page 18 of Pravda.
- They habitually carry brief cases or knit bags and most of their cash on their person to purchase the occasional high quality merchandise which appears unannounced by advertising in their stores. Each such purchase entails hours of standing in line (three lines for each purchase of a single grocery item).

In this setting it is interesting and instructive that they are basically satisfied with their depersonalized, shoddy medical service (high rates of surgical wound infections with the use of obviously soiled surgical linens, chronic severe shortages of all kinds of medications, the vast majority of all dental procedures done with out anesthesia, etc). Conversations with Smith repeatedly stressed that they were happy that *they* did not have the health care cost problem that

Americans have!!

Thus we can reflect on these two "distant mirrors" as relates to a society's health care system. The former book teaches us that we have not developed an historical perspective that allows us to have real satisfaction from our possession of scientific medicine. The latter reinforces this idea. *It is strange that of the two societies which represent the extremes of the individual-state dichotomy of humanism, it is the state-dominated society in which individuals seem the most satisfied with their medical care system.*

From this one might conclude that there is no possible route to societal happiness and satisfaction through excellence of medical care and that *our government's determined course to curtail such excellence is based on solid evidence that it will pay no political price in this effort. Better to distribute inferior and restricted care to all of society at reduced cost than to strive for high quality care for everyone with the inevitable cost entailed and shortfall of expectations in this effort.*

2. A talk given by the British Labor Party Chairman, Sam McChiskie, to the National Press Club in Washington, D.C. two weeks ago included the statement that "one cannot measure human satisfaction in comparison with the past but rather by what is available now." Hearing this statement opened my mind to another segment of truth that bears on our current situation. As I have stated above, I have long puzzled over why we do not develop an historical perspective of satisfaction over the gains we have made as a society. I have tended to blame the media for this by their constant accentuation of the negative. But this statement has helped me to understand that the media merely is reflecting our basic societal need to concentrate on the dark side of every issue. We, as individuals, are constantly comparing our circumstances with the *optimum available*. We in this country have concocted the notion that perfect health is the norm available, and also there is a tendency to equate health with happiness and emotional contentment. Thus real advances are ever short of expectations.
- The fact that more people are employed in our nation than ever before has no political credence. It is only the unemployment rate that we dwell on.
- That we are the best fed, best housed and best clothed society in the history of civilization has no political credence, but only that we still do have some pockets of relative poverty.

PRESIDENT'S LETTER

- In contrast to the Russian news media, ours markets a distillate of the tragic, the catastrophic, and the down side of each day. When tied to the TV ratings and the associated need to sell advertising, this constitutes a literal merchandising of human tragedy that is equally distorted but in the opposite polarity from the Russian news system.

From this, again, we can conclude that we and our society will always emphasize the residuum of unsolved medical problems and regardless of how much may be accomplished by future research to solve medical problems we will never overcome that process whereby there will be more and more anger and frustration over problems of a smaller and smaller scope. The better the treatments available to the more people the higher the degree of frustration over yet unsolved problems and underserved people.

3. A recent trip to Chicago to attend the Annual AMA Leadership Conference provided a chance for me to attend a course entitled "Increasing Patient Satisfaction." The entire emphasis was on *personalizing* service.

"Poll after poll, and the associated countless interviews with patients by marketing surveys have solidly confirmed and established that the only enduring gratification that people have from their medical care is a sense of the personal service that their physician gives to them as individuals. The concept of marketing focuses on this, and the sooner each of us recognizes this and acts on it the better we will salvage our individual practice regardless of the setting we are in.

"People take for granted that a certain degree of excellence is available in their own physician. They know that when they don't feel well help is now supposed to be available. They have been taught that this is their political right. Historical and societal perspectives have no relevance to them. They cannot judge the actual quality of scientific knowledge their physician has. They can only judge the degree to which their problem is, *by their own perception*, the concern of their doctor. Superb scientific judgment and treatment may be accompanied by prolonged waiting, cursory examinations, unintel-

ligible explanations and other manifestations of inconsiderate behavior by a doctor or his staff. They cannot judge the former, but they can, and do judge the latter. Thus if it is patient acceptance and public support we want and need it is at this level that it is attainable and only at this level."

(This is the main message from this marketing program.)

Thus we have as a common denominator the same basic ingredient in patient care as a fourteenth century physician who purged, puked and bled his already suffering patient (who may soon constitute the fourth fatality of his family in a week). We have the same ingredient as the Russian or British physician and their restricted therapeutic armamentarium and in the case of the Russians, dirty linens. Ours is a profession of personal service and only by recalling this can we maintain the franchise to deliver the medical care in this country.

All of this is, of course, very depressing. At least it is to me. For three decades now I have felt that the more I study, the wider and deeper is my knowledge to apply to my patients' needs, the broader the spectrum of possible explanations I have for each individual circumstance from which to choose an action, the better doctor I would be and therefore the better overall public acceptance I, and collectively speaking, my profession would have. Bedside manners were a matter of simply being a decent human being.

It is a major mid-career course-change to learn that this is not only irrelevant but that this traditional type of professional behavior actually constitutes a societal burden which is no longer tolerable. What we now learn is that the key to being a good doctor is to market our personalities and watch the clock to keep our schedules. *Now it is our knowledge that is secondary.*

I believe that in our restricted days that lie ahead we will need to internationalize our professional gratification and strive to gain more substance from meaningful interpersonal relations with our patients.

Those dim reflections from 14th century Europe and 20th century Russia are indeed instructive.



Donald C. Bell, M.D.
President

Minnesota Medical Association

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Minnesota Medical Association

Candidates for 1984 Offices Nominated

These profiles are of physicians nominated by the MMA for election at the 1984 MMA House of Delegates' meeting on May 12, 1984. Nominations may be made from the floor of the House.

President-Elect

M. Elizabeth Craig, M.D.

Dr. M. Elizabeth Craig is a pediatrician in St. Louis Park and is completing her second term as vice-president of MMA. Having practiced medicine since 1945, Dr. Craig held the position of chief-of-staff at Methodist Hospital in St. Louis Park in 1978. An MMA delegate since 1979, she is currently a member of the MMA Public Health Committee, the Hospital and Professional Relations Committee, and the Planning Committee for the Annual Meeting. Dr. Craig is a Clinical Assistant Professor, University of Minnesota Medical School.

An AMA member, Dr. Craig served as a delegate to the organizing meeting of the AMA's Medical Staff Section in December. She is a former board member of the Foundation for Health Care Evaluation, a former chair of the Foundation's Acute Care Committee, and currently serves on the board of the West Hennepin Community Mental Health Clinic.

Lloyd Ashley Whitesell, Jr. M.D.

Dr. Lloyd Ashley Whitesell, Jr., is a board certified family physician, who for the past seven years has chaired MINNPAC — the MMA's political action committee. In addition, he is the former chair of the Rural Medical Service Committee and has been a member of the MMA House of Delegates since 1969, the Interspecialty Council, and the Socioeconomic Council.

He has been a member of the Committee on Hospitals and Professional Relations and has served and chaired several reference committees of the MMA. A member of the Academy of Family physicians and the AMA, Dr. Whitesell has been a member of the MMA since 1960.

Vice-President

Patricia M. Cole, M.D.

Dr. Patricia M. Cole is a board certified family physician in Minneapolis and an Assistant Professor in the Department of Family Practice and Community Health at the University of Minnesota. A founder and senior partner of Riverside Family Physicians, Dr. Cole had been an MMA Delegate since 1982. In addition, she currently serves on MMA's Women Physicians Committee and is a member of the steering committee of the Minnesota Research Network.

A member of the Research Panel of the Minnesota Academy of Family Physicians from 1978-82, Dr. Cole has been a member of the MMA since 1977.

Leland G. Reichelt, M.D.

Board certified in family practice, Dr. Leland G. Reichelt has practiced for 25 years with a multi-specialty group in Wadena. A past president of the Upper Mississippi Medical Society and a member of the AMA, he has been active on a number of MMA Committees, including the Committee on Hospital and Professional Relations which he currently chairs. For the past nine years, Dr. Reichelt has been a delegate to the MMA House and has chaired and served on several Reference Committees of the House.

In 1964, Dr. Reichelt received the Distinguished Service Award from the Wadena Jaycees for his contributions to that community, and in 1968 he served as chief-of-staff at Wesley Hospital in Wadena. He is a former clinical assistant professor with the University of Minnesota Family Practice Department.

1984 Officers Nominated

Secretary

Richard B. Carley, M.D.

Dr. Richard B. Carley is a board certified otolaryngologist in St. Paul who has practiced with a specialty group since 1966. An MMA member since 1968, Dr. Carley served for three years as a delegate to the MMA House and in 1981 was a member of the Medical Service Committee.

Active in the Ramsey County Medical Society, and a member of the AMA, he is the past chairman of the Foundation for Health Care Evaluation. In addition, Dr. Carley is a member of the American Trilogical Society, the American Academy of Otolaryngology and Head and Neck Surgery, and the American Council of Otolaryngology. He also is a fellow of the American College of Surgeons.

Ellen R. Stubbs, M.D.

Dr. Ellen R. Stubbs is a board certified family physician in St. Paul and secretary of the MMA. Currently serving as a member of MMA's Administration and Finance Committee, Dr. Stubbs last year chaired the MMA Committee of Women Physicians and the Nominating Committee. She is a member of the Ramsey County Medical Society (RCMS) and since 1979 has served as an MMA alternate delegate or delegate from RCMS. Currently Dr. Stubbs is the chairperson of the Committee of Women Physicians, chairperson of the Ramsey County Delegation and a member of this year's Nominating Committee.

From 1978 to 1979, Dr. Stubbs served as a member of the CME Committee for the Ramsey County Medical Society and has been a member of the RCMS Membership Committee since 1980. She is a member of the AMA.

Treasurer

Patrick J. Barrett, M.D.

Dr. Patrick J. Barrett is a board certified family physician who practices in Minneapolis. An MMA member since 1960, Dr. Barrett has served as an alternate delegate or delegate to the MMA House since 1975. He also has served as president of the medical staff of St. Mary's Hospital from 1978 to 1981 and is a former president of the Minnesota Academy of Family Physicians as well as a former treasurer of that Association.

Currently serving on the Finance Committee of the American Academy of Family Physicians, Dr. Barrett is a member of the Medical Advisory Board of the Multiple Sclerosis Society and is on the Board of Trustees of the St. Paul Seminary. In addition, he is a member of the Board of Directors of the University of Notre Dame Alumni Association and is a member of the Hennepin County Medical Society and the AMA.

Joseph A. Cella, Jr., M.D.

Board certified in obstetrics and gynecology, Dr. Joseph Cella, Jr. currently practices with a group specialty practice in Minneapolis. In addition, he holds an appointment as a clinical associate professor at the University of Minnesota. For the past ten years, Dr. Cella has served on MMA's Committee on Administration and Finance, and for three years has been a member of the Hospital and Professional Relations Committee. He has been a member of the MMA House of Delegates and a member of the MMA since 1960.

From 1974-76, Dr. Cella served as president of St. Mary's Hospital in Minneapolis and is a past president of the Minnesota Division of the American Cancer Society.

1984 Officers Nominated

Speaker of House of Delegates

Richard K. Simmons, M.D.

Dr. Richard K. Simmons is serving his third term as speaker of the MMA House of Delegates. A former vice speaker of the House, Dr. Simmons served as an MMA delegate from 1975 to 1979.

He is board certified, has been engaged in family practice in Bloomington since 1958, and has held numerous positions and offices in the Minnesota Academy of Family Physicians, including selection as the 1979-80 Merit Award recipient. A past president and chairman of the Board of the Physicians Health Plan, Dr. Simmons is currently medical director for the Plan. He has served as a member of the Board of Directors of the American Association of Foundations for Health Care and for three years as a director of the Hennepin County Medical Society. Dr. Simmons has been active on the MMA Executive Committee and is a member of the AMA.

Vice Speaker of House of Delegates

John E. Sutherland, M.D.

Dr. John E. Sutherland is program director of the University of Minnesota Affiliated Community Hospital Family Practice Residency Program at the University of Minnesota and a former consultant in Family Medicine at the Mayo Clinic. He is a former chief of staff at North Memorial Medical Center in Robbinsdale and Louis Weiner Memorial Hospital in Marshall. His professional activities include active participation in the Minnesota Academy of Family Physicians (MAFP) of which he was president in 1982-83. In 1977, he received the MAFP Merit Award for his contributions to family medicine.

A board certified family physician, Dr. Sutherland has served on MMA's Ad Hoc Committee on Health Care Cost Containment, on the MINNPAC Board and is currently a member of the Communications Committee, and the Interspecialty Council. He has served on MMA's PPO Steering Committee, is a member of the AMA, and has been an MMA delegate. Currently, he chairs the MMA Ad Hoc Committee on Public Relations.

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MMA Board of Trustees Reports 1984 AMA Delegate and Alternate Delegate Nominees

The MMA Board of Trustees submits the AMA Delegate and Alternate Delegate nominees and their profiles. The election will take place during the May 12 session of the MMA House of Delegates. Additional nominations will be accepted from the floor of the House.

Delegates (3 to be elected)

William E. Jacott, M.D.

Dr. William E. Jacott has been a delegate to the AMA since 1980, prior to which he served four years as an alternate delegate. Extremely active with the AMA, he currently serves on the AMA's Council on Medical Education as vice chairman. In addition, he is one of three AMA representatives on the Accreditation Council for Continuing Medical Education (ACCME) and chairs the Council on Medical Education's Legislation Committee.

Board certified in family practice, Dr. Jacott practices with the Duluth Clinic, Ltd., a large multi-specialty group. He has been a member of the Minnesota State Board of Medical Examiners since 1976 and is on the Board of the Federation of State Medical Boards. For the Teacher of the Year Award from the Minnesota Academy of Family Physicians, he is a recipient.

Severin H. Koop, Jr., M.D.

Dr. Severin H. Koop, Jr. is a board certified otolaryngologist practicing in St. Cloud and a delegate to the AMA since May, 1983. The immediate past-president of the MMA, Dr. Koop served as speaker of the MMA House of Delegates from 1978 to 1980 and as vice speaker from 1975 to 1978.

Over the years, Dr. Koop has been active on numerous MMA committees and has participated regularly in the activities of the Stearns Benton County Medical Society. In 1975, he was president of the Minnesota Academy of Ophthalmology and Otolaryngology.

Richard B. Tompkins, M.D.

An internist at the Mayo Clinic, Dr. Richard B. Tompkins has been an alternate delegate to the AMA since 1982. In addition to serving on the Minnesota Board of Medical Examiners, Dr. Tompkins has been active on a number of MMA committees, including the Medical Practices and Planning Committee, which he has chaired since 1982, the Rheumatic Diseases Committee which he chaired in 1980-81 and the Nominating Committee. He is also a member of the MMA House of Delegates.

Alternate Delegate (3 to be elected)

James F. Knapp, M.D.

Dr. James F. Knapp is a board certified family physician in Detroit Lakes and since 1982 has been an alternate delegate to the AMA. Last year, he was selected to represent the MMA on the AMA's Health Policy Agenda Advisory Committee. In addition to serving on MMA's Long Range Planning Committee, Dr. Knapp currently chairs the Minnesota Medical Services Corporation and the Professional Information Corporation. He was chairman of the MMA Board of Trustees from May, 1979 to May, 1982 and served on the Board from May, 1975 to May, 1982.

Dr. Knapp is chairman of Dr. William E. Jacott's Re-election Committee.

Delegates and Alternates

S. R. Maxeiner, Jr., M.D.

Dr. S. R. Maxeiner, Jr. is board certified in surgery and since last May has served as an alternate delegate to the AMA. The immediate past chairman of the Board of Directors of the Hennepin County Medical Society, Dr. Maxeiner was president of that Society in 1981.

He has served on numerous MMA committees including the Committee on Automotive Injuries, the Committee on Medical Services, and the Ad Hoc Committee on Public Relations. In addition, he is on the Board of Directors of the Hennepin County Medical Foundation and the United Way.

Audrey M. Nelson, M.D.

Board certified in rheumatology and internal medicine, Dr. Audrey M. Nelson practices at the Mayo Clinic where she is a member of the Board of Governors, a member of the Foundation Board of Trustees, and an assistant professor of medicine.

She has been a member of the Women Physicians Committee since 1982 and currently serves on the Ad Hoc Committee for the formation of an MMA Hospital Medical Staff Section. In addition, she is the immediate past-president of the Zumbro Valley Medical Society and a fellow with the American College of Physicians.

Critical Care Medicine

North Central Critical Care Society has been organized for those involved in critical care medicine. Our goal is to promote educational opportunities for all members. The first meeting will be held May 19, 1984 at the Hyatt Regency Hotel. Registration 8:45 a.m.

If you or any of your colleagues are interested in membership in this organization, please contact: Richard M. Sweet, M.D., Secretary-Treasurer, 2545 Chicago Avenue So., Suite 610, Minneapolis, Minnesota, 55404, for further details.

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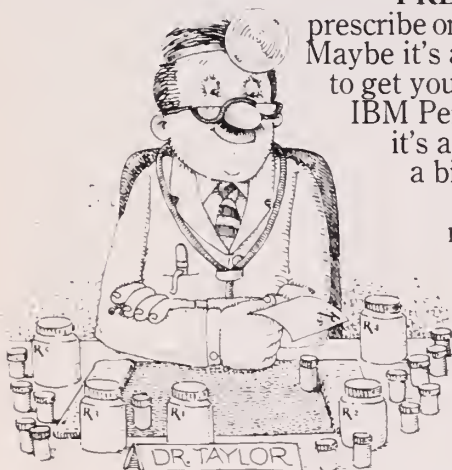
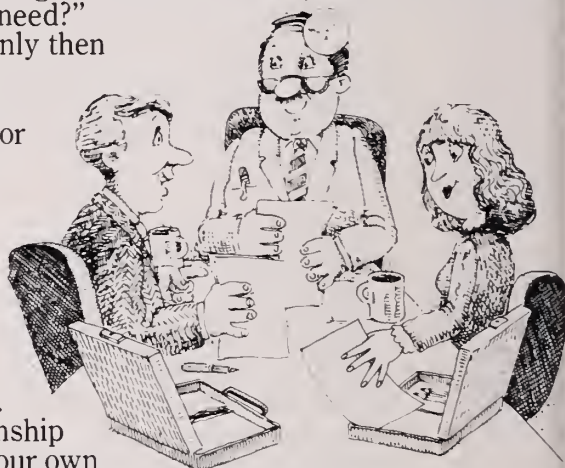
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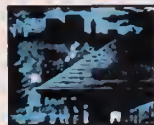
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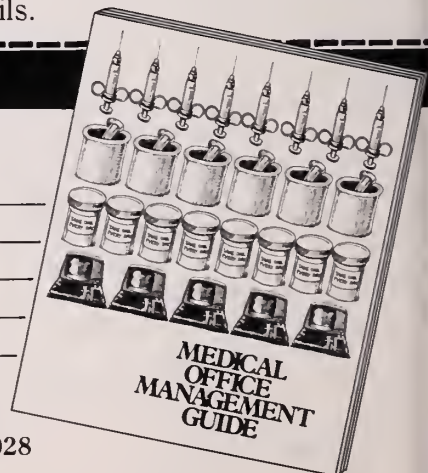
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MIM-4

Mechanical Low Back Pain

W. JOHN DAWSON, JR., M.D.*

LOW BACK PAIN is recognized as a major medical problem affecting from 50% to 80% of the population of the Western countries. The economic burden to society with the loss of productivity and the cost of treatment programs may exceed \$14 billion annually.¹ When extensive evaluations by experienced clinicians fail to identify the exact cause of the low back pain, we may describe it as *mechanical low back pain*. It may also be called lumbago, low back-strain or syndrome, or musculo-skeletal imbalance. Suggestions have been made to label it "idiopathic organic spine pain"¹ or "nonspecific low back pain".² Either label seems appropriate.

Conservative (ambulatory) care of non-specific low back pain may include various modalities: bed rest, analgesics/muscle relaxants, traction, exercise, weight reduction, heat or cold applications, massage, bracing/back support, injection of trigger points, electrical stimulation, patient education programs, etc. Many clinicians have examined and classified these types of treatment and claimed good results even though controlled studies have demonstrated only minimal advantage of any one method.² The natural history of the disease indicates that 70% of all patients with low back pain will get well in two to four weeks and 90% will do so in two months.²

Exercises remain a key element of most programs for non-specific low back pain. Dr. Paul C. Williams has had his postural exercises copied and recopied since his early publications.^{3,4,5} His exercise program was "directed at adequately developing the flexor muscles of the lumbosacral spine and passively stretching the extensor muscles and fascia".⁴ The instructional program he proposed included a follow-up visit for correction of errors in exercising and further instruction in postural attitudes. Unfortunately many back flexion exercises now carrying his name have been modified to the degree that their application may actually violate some of the principles he advanced. At least some clinicians using "Williams' Exercises" do not apply these techniques as he advocated and a review of his recommendations may be enlightening.

Today "Low Back Programs" exist at many clinics and hospitals. Many claim successful track records, especially in modifying life styles or helping the patient understand his condition. However, in many such programs, the individual with initial (mechanical) non-specific low back pain may be a rarity.

Transcutaneous electrical stimulation (TENS) is being used for all types of low back pain with varying success. When applied in the treatment of acute, post-operative and chronic intractable pain of diverse etiologies, significant success has been claimed. However, when used for patients having low back pain primarily on a psychogenic or functional basis, satisfactory pain relief from this modality has not resulted. One study applied this modality to fifteen nonsurgical low back pain patients having diagnoses of functional pain. Forty per cent initially had significant pain relief but this effect of TENS did not last longer than two months. After initiation of TENS, increased pain and/or bizarre and inappropriate sensations and behavior were frequently noted.⁶

Many clinicians recognize the variabilities in outcome from various treatment approaches in spinal pain programs. A scoring system has been demonstrated as an effective method in the predictability of outcome and should be helpful in directing better therapies for low back pain individuals.⁷ Likewise, a testing system for low back rehabilitation using Cybex/Isokinetics promises successful application for industrial screening as well as personalized outpatient programs. Current research is advancing the application of various individualized postural exercise programs relative to different biomechanical problems. Liquid crystal thermography of the extremities is useful in the assessment of back pain. Good correlation of its findings with myelography and surgery is reported and further applications of this inexpensive technique may follow.⁸

Epidemiologic studies are identifying segments of our population most likely to experience non-specific (mechanical) low back pain. Technology is attempting to develop better preventive and therapeutic approaches. Will this ailment continue at a high incidence because, as Blackburn has said, "there is no conventional cure for the major maladies of modern

*Clinical Assistant Professor, Department of Physical Medicine and Rehabilitation, University of Minnesota, Minneapolis.

man, once these become manifest"?⁹ Is it also true as Naisbitt has written, that "when we fall into the trap of believing, or more accurately, hoping that

technology will solve all of our problems, we are actually abdicationing the high touch of personal responsibility"?¹⁰

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United Scleroderma Foundation Twin Cities Area Chapter

Scleroderma is a crippling and incurable disease. Its name is derived from the Greek words "sclero" (hard) and "derma" (skin). It is commonly known as the disease that turns people to stone.

Scleroderma is classified as a connective tissue disorder and thought to result from narrowing of the blood vessels. The disease is divided into two major forms: localized and systemic.

Localized scleroderma involves the skin and subcutaneous tissues and causes cosmetic and mobility problems. The systemic form is often fatal and affects the esophagus, heart, lungs, intestines, kidneys and skin. Scleroderma is related to rheumatoid arthritis and lupus.

The chapter is willing to provide information about their activities to physicians. They would also appreciate it, if you would suggest to your scleroderma patients that they contact the chapter to learn about their free services; including monthly educational presentations, etc.

You may contact Julie A. Schmidt, Twin Cities Area Chapter of the United Scleroderma Foundation, 1645 W. Minnehaha Ave., St. Paul, MN 55104. Or telephone her at: (612) 644-0508.

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Drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy directed to the individual. If this combination represents the best management, its use may be more convenient in the management of hypertension and edema. It is static but must be reevaluated as conditions in each patient warrant.

Indications: Concomitant use with other potassium-sparing agents such as spironolactone or amiloride. Further use in patients with progressive renal or hepatic dysfunction, hyperkalemia, or persistently elevated serum potassium. Hypersensitivity to either thiazide or other sulfonamide-derived drugs.

Contraindications: Do not use potassium supplements, dietary or otherwise, if hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is indicated, potassium tablets should not be used. Hyperkalemia has been reported and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter per day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K⁺ levels should be determined. If hypokalemia develops, substitute a thiazide alone, if K⁺ intake. Associated widened QRS complex or arrhythmias requires prompt additional therapy. Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards. In the fetus or neonatal jaundice, thrombocytopenia, other reactions seen in adults. Thiazides appear and their excretion may appear in breast milk. If their use is essential, the mother should stop nursing. Adequate information on use in nursing is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Warnings: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids, and during concurrent use with amphotericin B, corticosteroids or corticotropin [ACTH]). Periodic BUN and creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Cumulative effects of the drug may develop in patients with impaired renal function. Thiazides should be used with caution in patients with impaired hepatic function. They can cause coma in patients with severe liver disease. Observe patients for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, granulocytosis, and aplastic and hemolytic anemia have been reported with thiazides. Thiazides may cause manifestation of diabetes mellitus. The effects of oral anticoagulants may be altered when used concurrently with hydrochlorothiazide; adjustments may be necessary. Clinically insignificant changes in arterial responsiveness to norepinephrine have been reported. Thiazides have also been shown to increase the hypotensive effect of nondepolarizing muscle relaxants such as rocuronium. Triamterene is a weak folic acid antagonist. Do not use in patients with cirrhosis with splenomegaly. Anticardiac effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. Triamterene has been found in renal stones in association with the other usual components. Therefore, 'Dyazide' should be used with caution in patients with histories of stone formation. A few occurrences of acute renal failure have been reported in patients on 'Dyazide' when treated with indomethacin. Therefore, caution is advised in administering nonsteroidal anti-inflammatory agents with 'Dyazide'. The following may occur: transient elevated BUN, hypokalemia or both, hyperglycemia and glycosuria (diabetic requirements may be altered), hyperuricemia and gout, intoxication (in hypokalemia), decreasing alkali reserve, metabolic acidosis. 'Dyazide' interferes with fluorescence measurement of quinidine. Hypokalemia is uncommon with 'Dyazide' but should it develop, corrective measures should be taken such as potassium supplementation or increased dietary potassium-rich foods. Corrective measures should be taken cautiously and serum potassium levels determined. True corrective measures and 'Dyazide' should be used. Laboratories reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Concurrent use of propofol may increase the risk of severe hypotension. Serum PBI levels may decrease without signs of thyroid dysfunction. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function.

'Dyazide' may add to or potentiate the action of other antihypertensive drugs.

'Dyazide' may reduce renal clearance of lithium and increase the risk of lithium toxicity.

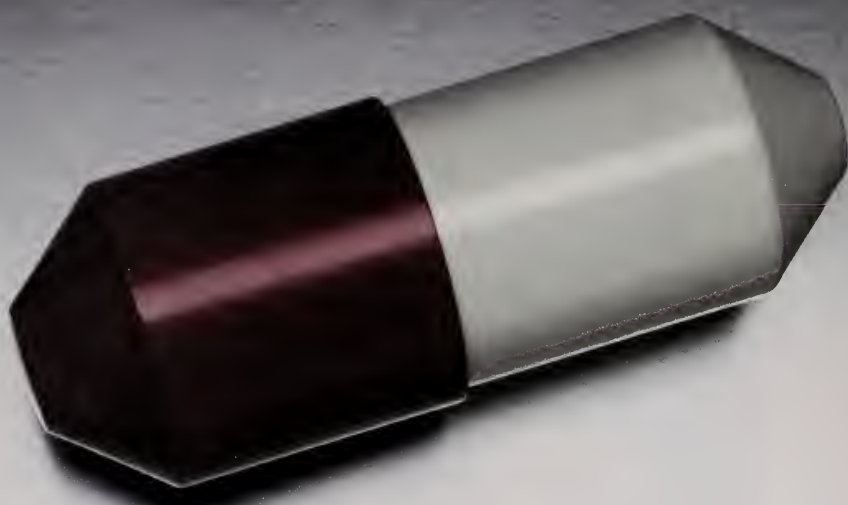
Reactions: Muscle cramps, weakness, dizziness, head-ache, mouth, anaphylaxis, rash, urticaria, photosensitivity, other dermatological conditions, nausea and vomiting, constipation, other gastrointestinal disturbances; postural hypotension (may be aggravated by alcohol, barbiturates, sedatives). Necrotizing vasculitis, paresthesias, icterus, xanthopsia and respiratory distress including pulmonary edema, transient blurred vision, sialadenitis, vertigo have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual components. Rare incidents of acute interstitial nephritis have been reported. Impotence has been reported in a few patients on 'Dyazide', although a causal relationship has not been established.

'Dyazide' is supplied in bottles of 1000 capsules; Unit Packages (unit-dose) of 100 (intended for institutional use only); In Patient-Pak™ unit-of-use bottles of 100.

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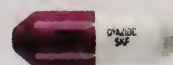
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(ASPIRIN) ZERO ORDER
RELEASE

Arthritis Therapy That Checks Out.



Gastric distress is reduced. pH-dependent matrix virtually doesn't release in acidic stomach.



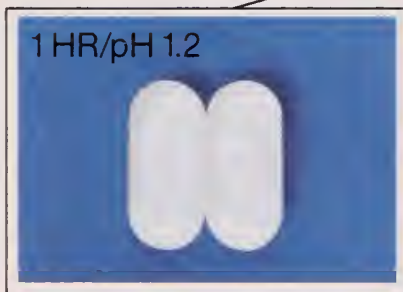
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2 HR/pH 7.5



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Economical...comparable efficacy and safety as other NSAIDs, yet costs approximately one-half as much.



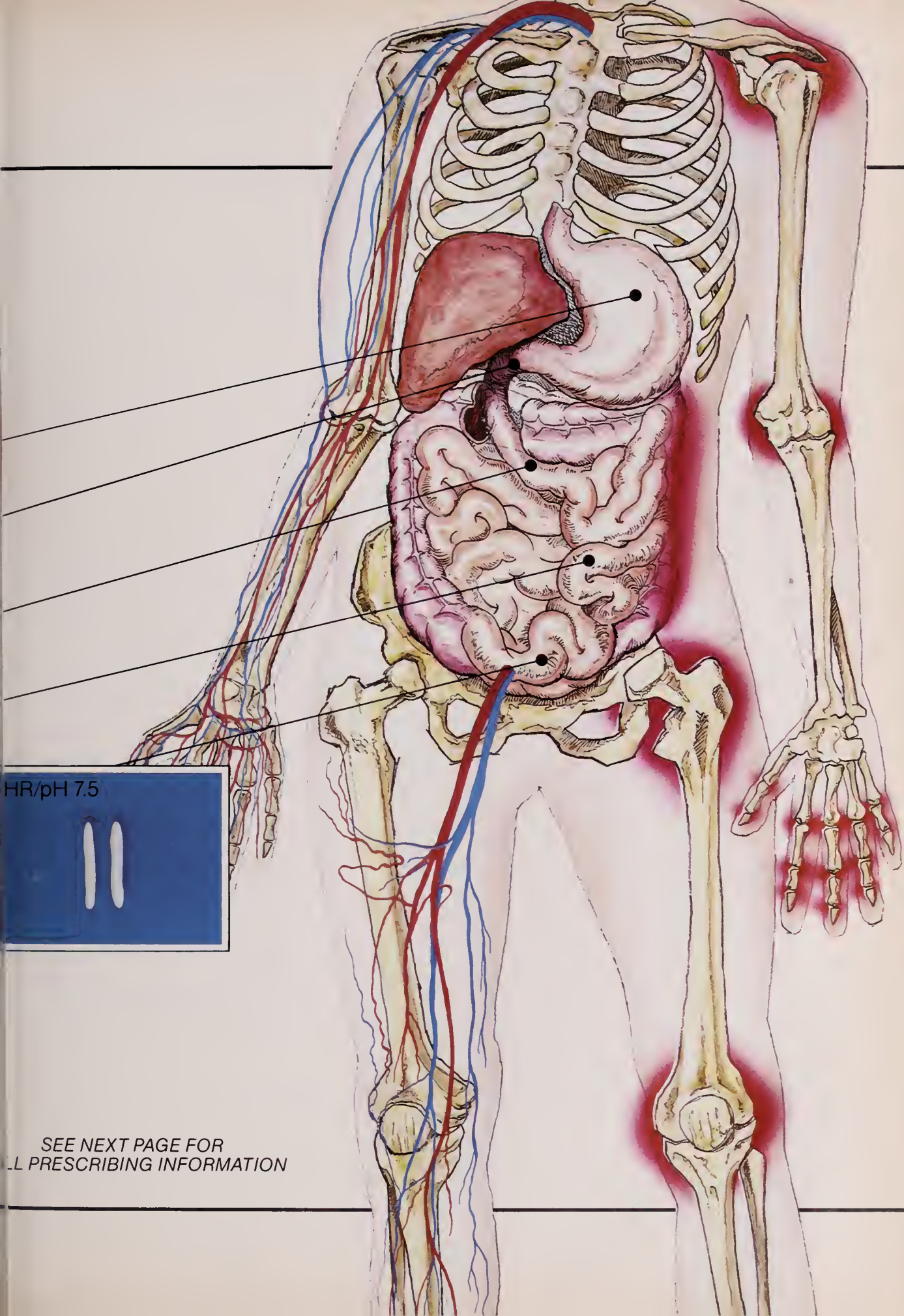
Your first step in arthritis therapy... **ZORprin[®]** (ASPIRIN) Zero-Order Release.

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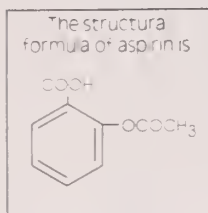


HR/pH 7.5

SEE NEXT PAGE FOR
ALL PRESCRIBING INFORMATION

ZORprin (ASPIRIN) Zero-Order Release

DESCRIPTION: Each capsule-shaped tablet of Zorprin contains 800 mg of aspirin, formulated in a special matrix to control the release of aspirin after ingestion. The controlled availability of aspirin provided by Zorprin approximates zero-order release, the *in vitro* release of aspirin from the tablet matrix is linear and independent of the concentration of the drug. **CLINICAL PHARMACOLOGY:** Aspirin, as contained in Zorprin, is a salicylate that has demonstrated anti-inflammatory and analgesic activity. Its mode of action as an anti-inflammatory and analgesic agent may be due to the inhibition of synthesis of prostaglandins, although its exact mode of action is not known. **Zorprin dissolution is pH-dependent.** *In vitro* studies have shown very little aspirin to be released in acidic solutions, whereas, Zorprin releases the majority of its aspirin (90%) in a zero-order mode at a neutral to alkaline pH. It is this pH dependence of Zorprin that reduces direct contact between aspirin and the gastric mucosa, resulting in a reduction of its gastrointestinal side-effect potential. **Bioavailability data for Zorprin have confirmed that plasma levels of salicylic acid and acetylsalicylic acid can be measured 24 hours after a single oral dose.** This substantiates a twice daily dose regimen. Multiple dose bioavailability studies showed similar steady-state salicylate levels for Zorprin as for conventional release aspirin using the same total daily dose. Long-term monitoring of salicylate levels showed no signs of accumulation once steady-state levels were reached (4-6 days). **Studies of *in vivo* prostaglandin levels (PGE2) have shown Zorprin plasma levels of salicylic acid and acetylsalicylic acid to reduce PGE2 levels 14 hours after a single oral 800 mg dose while an equivalent dose of aspirin produced a reduction of PGE2 levels only through six hours.** Zorprin's effect on prostaglandins other than PGE2 has not been determined. **Salicylates are excreted mainly by the kidney, and from studies in humans it appears that salicylate is excreted in the urine as free salicylic acid (10%); salicyluric acid (75%); salicylic phenolic (10%); acyl glucuronides (5%) and gentisic acid (<1%).**



INDICATIONS & USAGE: Zorprin is indicated for the treatment of rheumatoid arthritis and osteoarthritis. The safety and efficacy of Zorprin have not been established in those rheumatoid arthritis patients who are designated by the American Rheumatism Association as Functional Class IV (incapacitated, largely or wholly bedridden, or confined to wheelchair, little or no self-care). **In patients treated with Zorprin for rheumatoid arthritis and osteoarthritis, the anti-inflammatory action of Zorprin has been shown by reduction in pain, morning stiffness and disease activity as assessed by both the investigators and patients.** **In clinical studies in patients with rheumatoid arthritis and osteoarthritis, Zorprin has been shown to be comparable to conventional release aspirin in controlling the aforementioned signs and symptoms of disease activity and to be associated with a statistically significant reduction in the milder gastrointestinal side effects (see ADVERSE REACTIONS).** Zorprin may be well tolerated in some patients who have had gastrointestinal side effects with conventional release aspirin, but these patients when treated with Zorprin should be carefully followed for signs and symptoms of gastrointestinal bleeding and ulceration. **Since there have been no controlled trials to demonstrate whether or not there is any beneficial effect or harmful interaction with the use of Zorprin in conjunction with other nonsteroidal anti-inflammatory agents (NSA), the combination cannot be recommended (see Drug Interactions).** **Because of its relatively long onset of action, Zorprin is not recommended for antipyresis or for short-term analgesia.** **CONTRAINDICATIONS:** Zorprin should not be used in patients known to be hypersensitive to salicylates or in individuals with the syndrome of nasal polyps, angioedema, bronchospastic reactivity to aspirin, renal or hepatic insufficiency, hypoprothrombinemia or other bleeding disorders. Zorprin is not recommended for children under 12 years of age. It is contraindicated in all children with fever accompanied by dehydration. **WARNINGS:** Zorprin should be used with caution when anticoagulants are prescribed concurrently, since aspirin may depress platelet aggregation and increase bleeding time. Large doses of salicylates may have hypoglycemic action and enhance the effect of the oral hypoglycemics, concomitant use therefore is not recommended. However, if such use is necessary, dosage of the hypoglycemic agent must be reduced. The hypoglycemic action of the salicylates may also necessitate adjustment of the insulin requirements of diabetics. **While salicylates in large doses have a uricosuric effect, smaller amounts may reduce water excretion and increase serum uric acid.** **USE IN PREGNANCY:** Aspirin can harm the fetus when administered to pregnant women. Aspirin interferes with maternal and infant hemostasis and may lengthen the duration of pregnancy and parturition. Aspirin has produced teratogenic effects and increases the incidence of stillbirths and neonatal deaths in animals. **If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.** **Aspirin should not be taken during the last 3 months of pregnancy.** **PRECAUTIONS:** Appropriate precautions should be taken in prescribing Zorprin for patients who are known to be sensitive to aspirin or salicylates. Particular care should be used when prescribing this medication for patients with erosive gastritis, peptic ulcer, mild diabetes or gout. As with all salicylate drugs, caution should be exercised in prescribing Zorprin for those patients with bleeding tendencies or those on anticoagulants. **In order to avoid exacerbation of disease or adrenal insufficiency, patients who have been on prolonged corticosteroid therapy should have their therapy tapered slowly rather than discontinued abruptly when Zorprin is made a part of the treatment program.** **Patients receiving large doses of aspirin and/or prolonged therapy may develop mild salicylate intoxication (salicylism) that may be reversed by dosage reduction.** **Salicylates can produce changes in thyroid function tests.** **Salicylates should be used with caution in patients with severe hepatic damage, preexisting hypoprothrombinemia, Vitamin K deficiency and in those undergoing surgery.** **Since aspirin release from Zorprin is pH dependent, it may change in those conditions where the gastric pH has been increased as a result of antacids, gastric secretion inhibitors or surgical procedures.** **Drug Interactions:** (See **WARNINGS**) Aspirin may interfere with some anticoagulant and antidiabetic drugs. Drugs which lower serum uric acid by increasing uric acid excretion (uricosurics) may be antagonized by the concomitant use of aspirin, particularly in doses less than 20 grams/day. Nonsteroidal anti-inflammatory drugs may be competitively displaced from their albumin binding sites by aspirin. This effect may negate the clinical efficacy of both drugs. Also, the gastrointestinal inflammatory potential of nonsteroidal anti-inflammatory drugs may be potentiated by aspirin. The combination of alcohol and aspirin may increase the risk of gastrointestinal bleeding. **Aspirin may enhance the activity of methotrexate and increase its toxicity.** **Sodium excretion produced by spironolactone may be decreased in the presence of salicylates.** Concomitant administration of other anti-inflammatory drugs may increase the risk of gastrointestinal ulceration. Urinary alkalinizers decrease aspirin's effectiveness by increasing the rate of salicylate renal excretion. Phenobarbital decreases aspirin's effectiveness by enzyme induction. **Pregnancy Category D.** See **WARNINGS** Section. **Nursing Mothers:** Salicylates have been detected in the breast milk of nursing mothers. Because of the potential for serious adverse reactions from aspirin in nursing infants, a decision should be made whether to discontinue nursing or discontinue the drug, taking into account the benefit of the drug to the mother. **ADVERSE REACTIONS: Hematologic:** Aspirin interferes with hemostasis. Patients with a history of blood coagulation defects or receiving anticoagulant drugs or with severe anemia should avoid Zorprin. Aspirin used chronically may cause a persistent iron deficiency anemia. **Gastrointestinal:** Aspirin may potentiate peptic ulcer, and cause stomach distress or heartburn. Aspirin can cause an increase in occult bleeding and in some patients massive gastrointestinal bleeding. However, the greatest release of active drug from Zorprin is designed to occur in the small intestine over a period of time. This has resulted in fewer symptomatic gastrointestinal side effects. **Allergic:** Allergic and anaphylactic reactions have been noted when hypersensitive individuals have taken aspirin. Fatal anaphylactic shock, while not common, has been reported. **Respiratory:** Aspirin intolerance, manifested by exacerbations of bronchospasm and rhinitis, may occur in patients with a history of nasal polyps, asthma, or rhinitis. The mechanism of this intolerance is unknown but may be the result of aspirin-induced shunting of prostaglandin synthesis to the lipoxygenase pathway and the liberation of leukotrienes, e.g. slow-reacting substance of anaphylaxis. **Dermatologic:** Hives, rashes, and angioedema may occur, especially in patients suffering from chronic urticaria. **Central Nervous System:** Taken in overdoses, aspirin provides stimulation which may be manifested by tinnitus. Following initial stimulation, depression of the central nervous system may be noted. **Renal:** Aspirin rarely may aggravate chronic kidney disease. **Hepatic:** High doses of aspirin have been reported to produce reversible hepatic dysfunction. **OVERDOSAGE:** Overdosage, if it occurs, would produce the usual symptoms of salicylism: tinnitus, vertigo, headache, confusion, drowsiness, sweating, hyperventilation, vomiting or diarrhea. Plasma salicylate levels in adults may range from 50 to 80 mg/dl in the mildly intoxicated patient to 110 to 160 mg/dl in the severely intoxicated patient. An arterial blood pH of 7.1 may indicate serious poisoning. The clearance of salicylates in children is much slower than adults and should receive due consideration when aspirin overdoses occur in infants. Salicylate half-lives of 30 hours have been reported in infants 4-8 months old. Treatment for mild intoxication should include emptying the stomach with an emetic, or gastric lavage with 5% sodium bicarbonate. Individuals suffering from severe intoxication should, in addition, have forced diuresis by intravenous infusions of sodium bicarbonate and dextrose or sodium lactate. In extreme cases, hemodialysis or peritoneal dialysis may be required. **(A plasma salicylate level of 160 mg/dl in an adult is usually considered lethal.)** **DOSE & ADMINISTRATION:** **In order to achieve a zero-order release, the tablets of Zorprin should be swallowed intact.** **Breaking the tablets or disrupting the structure will alter the release profile of the drug.** **It is recommended that Zorprin be taken with sufficient quantities of fluids (8 oz. or more).** **Adult Dosage:** For mild to moderate pain associated with rheumatoid arthritis and osteoarthritis, the recommended initial dose of Zorprin is 1600 mg (2-800 mg tablets) twice a day. Because of Zorprin's prolonged release of aspirin into the bloodstream, Zorprin tablets may be taken as a b.i.d. dose. Further adjustment of the dosage should be determined by the physician, based upon the patient's response and needs. Since it will take 4-6 days to reach steady-state levels of salicylic acid with Zorprin, it is recommended dosages be given for at least one week before further adjustment. In general, patients with rheumatoid arthritis seem to require higher doses of Zorprin than do patients with osteoarthritis. **Zorprin is not recommended for children below the age of 12.** **HOW SUPPLIED: Zorprin Tablets 800 mg:** plain, white capsule-shaped tablets. **Bottles of 100 Tablets—NDC 0524-0057-01** **Caution:** Federal law prohibits dispensing without prescription. **U.S. Patent No. 4,308,251. Manufactured and Distributed by: BOOTS PHARMACEUTICALS, INC., Shreveport, Louisiana 71106 U.S.A.**

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Recognition of Potential Cardiac Problems in Children

JAMES H. MOLLER, M.D.*

Knowledge about functional murmurs and blood pressure recording techniques reduces false diagnosis of cardiac disease in children.

THE PRIMARY CARE PHYSICIAN, in dealing with children, must evaluate clinical and laboratory data suggesting cardiac disease, reach diagnosis, institute treatment, and on occasion seek consultation. This article discusses the more common problems related to the heart and circulation which the physician must evaluate. The major sections are: Recognition of Cardiac Disease, Diagnosis of Rheumatic Fever, and Congestive Cardiac Failure.

The article is not intended to discuss the management of those patients known to have cardiac disease, for in most circumstances they will be seen in consultation with a cardiologist who will make recommendations about management.

Recognition of Cardiac Disease

The presence of a possible cardiac abnormality may be brought to the physician's attention by parents' concerns, information obtained in history, or findings on physical examination. The physician must interpret findings in light of the normal variations in the cardiovascular system which occur during childhood, particularly during the neonatal period.

In the first part of this article I will discuss major clinical features which may arouse the suspicion of cardiovascular disease, the normal variations, and how to distinguish significant from unimportant.

Information from History

On taking a history of a child, information may be gathered which leads to the suspicion that a cardiac problem may be present. The symptoms most frequently obtained will be discussed together with the important points to detect an underlying cardiac problem.

Cyanosis

Cyanosis is the bluish color imparted to the skin

when there is greater than 5 gm% of reduced hemoglobin in capillary beds. Cyanosis can be classified as either peripheral or central.

In peripheral cyanosis, which is very common and a benign condition, the heart and lungs are normal and the blood leaving the heart is fully saturated. Cyanosis occurs because of sluggish blood flow through capillaries and the resultant continual extraction of oxygen from the blood, so it contains a large (>5 gm%) amount of reduced hemoglobin. Since the reduced hemoglobin is in capillaries, the involved body area appears cyanotic.

Peripheral cyanosis, also called acrocyanosis, describes the common distribution of this form of cyanosis, namely occurring in the extremities. Peripheral cyanosis occurs frequently when infants or children are exposed to cold. The cold leads to vasoconstriction and sluggish capillary flow. The parents complain that the child's hands and area around the mouth become blue in these circumstances.

Peripheral cyanosis is also common in neonates, and may cause confusion and raise the suspicion of cyanotic heart disease. In neonates peripheral cyanosis disappears on warming, and movement (even passive) lessens it. Unlike central (significant) cyanosis, it does *not* involve the trunk or mucous membranes. Peripheral cyanosis of a single extremity can occur if there is interference with venous return, as might occur when a venous cutdown has been performed.

In contrast, central cyanosis indicates the presence of either a pulmonary lesion which interferes with oxygenation of blood flowing through the lungs, or a cardiac lesion associated with a right-to-left shunt, in that a portion of the systemic venous return bypasses the lungs and is delivered into the aorta. As a result, aortic blood is desaturated. Cyanosis is diffuse, involving not only the extremities but also the trunk and mucous membranes. It is unchanged on warming and may intensify with activity.

Central cyanosis indicates an important, and often urgent, medical or surgical problem which requires

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further investigation. Further historical data and physical diagnosis often provide clues indicating the presence of an underlying cardiac or pulmonary problem. Exceptions may occur in the neonate, in which serious and potentially fatal cardiac anomalies may be present even without a murmur; but usually physical examination provides supporting data for a cardiac lesion.

Chest Pain

Angina rarely occurs in children, even in those with congenital cardiac anomalies. This symptom is of particular concern in patients with a cardiac murmur for it might indicate myocardial ischemia. The few children I have seen with chest pain related to coronary insufficiency have symptoms of angina like those of an adult. Older children indicate that the pain is located beneath the sternum, and one even described it as "being sat upon by an elephant". The children indicate the location of the pain by placing the palm of their hand on the mid-anterior chest. The pain is persistent, not fleeting, and often initiated by activity.

In contrast, most chest pain that is described by children who happen to have murmurs is very different. It is described as transient and sharp. When asked to indicate its location, the child often points to the area over the left anterior chest, and with a fingertip. This chest pain is probably from the chest wall, and can be discounted as being of noncardiac origin.

Fatigue

In my experience, most patients with cardiac problems other than with cyanosis, do not complain of easy fatigability and this includes children with severe obstructive lesions.

Fatigue is a very subjective symptom which is influenced more by non-physical than physical factors. Some children simply prefer quiet, rather than active activities. In some families, fatigue is common, perhaps from boredom. In assessing the symptom of fatigue, consider the activity level of siblings and parents.

Fainting

Loss of consciousness can occur in patients with cardiac abnormalities, most commonly from: cyanotic conditions, particularly tetralogy of Fallot; severe left-sided obstructive lesions, such as aortic stenosis; or from arrhythmia. The episodes of unconsciousness are sudden and abrupt, and there usually are physical findings of underlying cardiac disease.

In a patient without other cardiac manifestations it is rare for a cardiac problem to cause uncon-

sciousness, and other problems should be explored. An electrocardiogram may be indicated to look for possible conduction abnormalities such as Wolff-Parkinson-White or the rare prolonged Q-T interval.

A careful history of the event may be helpful. I have seen several adolescent girls who fainted in church for prolonged standing in one position, particularly in warm weather.

Leg Aches

The complaint of leg aches might arouse the suspicion of rheumatic fever. Pain in the legs, particularly in the calf region, is common in school-aged children. Such "growing pains" are of unknown origin. The leg pain in children with rheumatic fever is localized to a joint, such as the ankle, knee, or hip and associated with objective findings of arthritis, erythema, pain on motion, and tenderness.

Clues from Physical Examination

Heart Murmurs

Virtually all school-aged children have a murmur at some time. Most are functional (innocent) murmurs; but they must be distinguished from significant murmurs. The reason for the prevalence of functional murmurs in children is unknown. They are evanescent in nature, appearing or becoming louder with fever, tachycardia, or excitement.

Unfortunately there is no single feature or simple test which characterizes functional murmurs or allows their easy distinction from significant murmurs.

Often the physician tends to back into the diagnosis of a functional murmur, "it doesn't sound significant, therefore it must be functional". But a definitive diagnosis can be made by the two-step process outlined below:

1. What are the characteristics of all functional murmurs?
 - a. The children are asymptomatic. Knowledge about the symptoms which were discussed above allows one to determine which are significant or meaningful symptoms
 - b. The murmur is soft and therefore unassociated with a thrill. A functional murmur is rarely louder than grade 3/6. An exception might occur in a febrile or anemic child, but with correction of these problems, the murmur becomes softer.
 - c. The heart sounds are normal. Particular attention must be directed toward the second heart sound. Is it split? Is it loud? Many forms of congenital heart disease alter the characteristics of the second heart sound.

The features of the second heart sound are particularly important in distinguishing one particular type of functional murmur (pulmonary flow-discussed below).

- d. The heart size is normal. A chest Xray is not required to determine if cardiac enlargement is present because usually physical examination provides sufficient clues. In patients with considerable cardiac enlargement, a precordial bulge, either of the left precordium or the sternum is found. Palpation for the location of the cardiac apex is a reliable means of determining cardiac size. The apical impulse is located in the mid-clavicular line, in the fourth left intercostal space through the age of four years, and in the fifth left intercostal space after that.

2. What type of functional murmur is it?

If each of these four criteria are met, then the murmur is most likely functional, although a small ventricular septal defect or other mild forms of heart disease may meet these criteria. That is why the next step, classifying the murmur as a particular type of functional murmur, is equally as important. There are four types of functional murmurs.

- a. Twangy-string murmur. Also called groaning, rubbing, or vibratory, these adjectives indicate an important feature of this murmur, it being of uniform frequency or pure tone. The murmurs are midsystolic, and located along the lower left sternal border or between that point and the cardiac apex. Because of this location, the murmur might be confused with that of a ventricular septal defect; but in the latter condition, the murmur is usually pansystolic, louder, and harsher. The twangy-string murmur is believed to originate from turbulent blood flow through the ventricular outflow tract.
- b. Pulmonary flow murmur. This is a soft ejection systolic murmur located along the upper left sternal border and below the left clavicle. Because of this location it might be confused with atrial septal defect. The characteristics of the second heart sound are normal in a patient with pulmonary flow murmur, whereas in patients with atrial septal defect the second heart sound is widely split and thus should be easily heard. A diastolic murmur is also common in patients with atrial septal defect. The pulmonary

flow murmur is believed to originate from turbulent flow through the right ventricular outflow tract.

- c. Venous hum. A venous hum arises from turbulent blood flow through the jugular venous system, particularly the right. Therefore the venous hum is usually located beneath the right clavicle. The murmur is continuous, and louder during diastole, because there is greater venous return to the heart during that phase of the cardiac cycle. Even within a given patient, the loudness of the murmur varies considerably. It is louder when the patient sits and softens or disappears when he reclines. Moving the patient's head from side to side changes its loudness and gentle pressure over the jugular vein diminishes its loudness.
- d. Arterial bruit. In every child a midsystolic murmur may be heard in the neck at the angle of the jaw, presumably from turbulent blood flow at the bifurcation of the carotid artery. Many of us have been taught that when a murmur is heard over the heart, we should listen in the neck because the murmur of aortic stenosis is transmitted to the neck. While this is true, remember that every child with a functional murmur over the precordium will have an additional carotid bruit. Do not diagnose aortic stenosis in each of them. In aortic stenosis, a thrill is present in the suprasternal notch and this should help to distinguish aortic stenosis with radiation to the neck from a child with another type of murmur and an arterial bruit.

To make a diagnosis of functional murmur, it is unnecessary to obtain a chest Xray or electrocardiogram in most instances, for the diagnosis can usually be established on clinical grounds. The child with a functional murmur should be allowed a full range of activities and receive routine medical care. He does not require special or additional visits to the physician. It is wise to tell the parents about the murmur and its benign nature. I often use the term "normal murmur" to indicate to the parents the benign nature. I do not believe that the school should be informed about the murmur, for they may be alarmed and inappropriately restrict the child's activities.

Neonatal Murmurs

Murmurs in newborns pose a more difficult prob-

lem in distinguishing significant from insignificant. The ratio of significant to functional murmurs is much higher at this age. Soon after birth, cardiac murmurs probably from ductus arteriosus, are common but most disappear by 24 hours of age. Some murmurs before 24 hours of age and most murmurs after this age are significant, and indicate the presence of congenital heart disease.

If the newborn with a murmur is cyanotic or tachypneic, he should be referred immediately to a cardiac center with capabilities of caring for neonatal cardiac problems. If the neonate is asymptomatic and feeding well, before discharge an electrocardiogram and chest Xray should be obtained. If both are normal, the child can be discharged and referred for evaluation. If either test is abnormal, he should be referred immediately.

Blood Pressure

Blood pressure should be measured in each child older than three years of age to identify children with hypertension. Previously hypertension was considered principally a disease of adulthood, but with experience, hypertension has been discovered as a health problem in children. In about one half the instances the hypertension is considered essential, but in the other half, a definable and often treatable cause is present.

Although recording of blood pressure is one of the most frequently performed diagnostic tests, it is also one of the most carelessly done. Exact, reliable, and repeatable blood pressure readings can be obtained in children, by taking precautions and performing blood pressure recordings according to the standards estab-

lished by the American Heart Association.

A proper sized blood pressure cuff should be used. There is not a single sized blood pressure cuff for children. Several size blood pressure cuffs are available for children, depending upon their age and size. A proper sized cuff is one which covers at least two thirds of the distance from the axilla to the elbow. I generally use the largest cuff which I can place about the arm without covering the antecubital area. Too narrow a blood pressure cuff leads to a falsely elevated blood pressure reading, and this difference can be up to 50 mmHg, particularly in infants.

The cuff should be tightly wrapped around the arm, and rapidly inflated. If the cuff is too loose or inflated slowly, the blood pressure value will be falsely low.

The antecubital fossa of the child should be at heart level. If the blood pressure is recorded when the arm is hanging at the patient's side, the blood pressure reading is elevated because in addition to the intravascular pressure, the pressure recording reflects the weight of the column of blood in the artery of the dependent arm. Similarly if the arm is elevated above the heart level, the blood pressure is falsely lowered.

The cuff should be deflated at the rate of 1-3 mmHg/second, until the manometer reaches zero. Pause before reinflating the cuff. If the cuff is not deflated completely and the pressure in the cuff exceeds the venous pressure, blood will be trapped in the arm, compressing the vein and falsely lowering the blood pressure.

The blood pressure should be recorded when the child is at ease, which is often at the end of the examination.

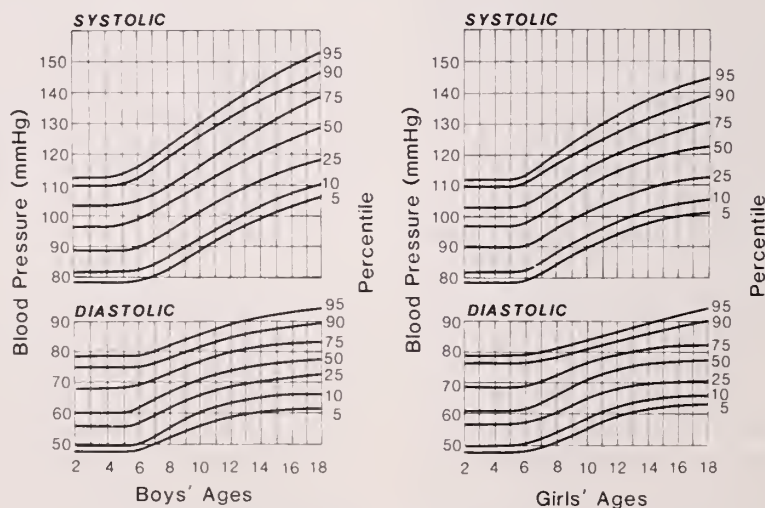


Figure — Range of blood pressure values for children from ages two to 18 years.

In neonates and infants, auscultatory blood pressure readings are difficult to obtain. If a blood pressure is to be measured in this age group, it can be obtained by the flush method. In this technique, a proper sized blood pressure cuff is placed around the forearm. The infant's hand is squeezed while the cuff is being inflated. The hand is released, and should appear blanched. The cuff is then deflated at the proper rate and the hand observed. The blood pressure at which the hand becomes red or flushes is noted, and this value represents the mean arterial pressure.

Once the blood pressure is obtained, it is compared to the normal values for age and sex (Figure). If the value is greater than the 95th percentile, it should be repeated at least once on this particular physical examination. If subsequent values are each elevated, the child should be asked to return on two more occasions for blood pressure measurement. In most instances, the subsequent values become normal. Only those children whose blood pressure recordings are persistently above the upper limits of normal should be further investigated by a cardiologist or nephrologist.

Diagnosis of Rheumatic Fever

The question of rheumatic fever may be raised in children who present with nonspecific complaints such as: leg aches, fever, and a murmur — usually functional. Because of the long-term implications of a diagnosis of rheumatic fever, it must be made with care. The diagnosis of acute rheumatic fever rests upon the application of the modified Jones' Criteria. These criteria were developed to establish a uniform standard for diagnosis of the disease, which would lead to a minimum number of children being incorrectly diagnosed or misdiagnosed.

The criteria are shown in the Table. They indicate that before considering clinical information for the diagnosis of rheumatic fever, there *must* be evidence of a preceding Group A, beta-hemolytic infection, as shown by either a positive throat culture or preferably serologic evidence of an antibody increase for

streptococcal products. If neither is present, then a diagnosis of acute rheumatic fever cannot be made regardless of the clinical features of the patient.

If the throat culture, or serologic tests are positive, then the history and physical examination must be reviewed to see if there is evidence for the presence of either two major criteria or one major and two minor criteria.

Major Criteria

There are five major criteria outlined in the Jones' Criteria.

1. Carditis: Any portion of the heart may be involved in acute rheumatic fever and carditis may be diagnosed if there is evidence of its involvement. Pericardial involvement is indicated by clinical findings of pericarditis, either a friction rub or pericardial effusion. Myocardial involvement is indicated by the presence of cardiomegaly, cardiac failure, or T wave inversion. Valvular involvement by the rheumatic processes can lead to valvular regurgitation. Three murmurs indicate valvular involvement: (a) Aortic insufficiency — early diastolic murmur along the left sternal border. (b) Mitral insufficiency — apical pansystolic murmur; or (c) the Carey-Coombs murmur — an apical mid-diastolic murmur. The characteristics of these murmurs are distinctive enough so they should not be confused with a functional murmur.
2. Polyarthritis: In acute rheumatic fever, the arthritis successively involves large joints, and therefore is called migratory polyarthritis. Arthritis should be diagnosed only if there are objective signs such as warmth, redness, and pain on movement to indicate joint involvement. Hips, knees, ankles, wrists, or elbows are the joints most frequently involved. Usually the findings of arthritis promptly disappear following aspirin administration.
3. Chorea: Sydenham's chorea or St. Vitus Dance may be a late complication of acute rheumatic fever. In chorea, there are purposeless, nonrepetitive movements of large muscles. The children may be described as "fidgety" or have gross motor problems such as hemiballismus. Emotional lability and easy tearfulness are common. Muscle movements on command are exaggerated.
4. Erythema Marginatum: Erythema marginatum is a less frequently occurring manifestation. The term describes a rash which most often occurs

TABLE

Revised Jones' Criteria for Diagnosis of Acute Rheumatic Fever

Evidence of Preceding Streptococcal Infection

Major Manifestations	Minor Manifestations
Carditis	Fever
Polyarthritis	Arthralgia
Chorea	Previous History of Rheumatic Fever
Erythema Marginatum	Elevated Acute Phase Reactants
Subcutaneous Nodules	Prolonged PR Interval

over the trunk. There are red splotches which have a distinct, well-marginated border. The rash is evanescent and may be brought only by a warm bath. The individual lesions appear, grow, and disappear rapidly, perhaps within 20 minutes.

5. Subcutaneous Nodules: This major manifestation occurs only in chronic active rheumatic fever and is therefore very rare. Subcutaneous nodules are small, pea-sized nodules located over the exterior surfaces of the extremities and occasionally over the nape of the neck. These nodules are mobile and non-tender.

Minor Criteria

The five minor criteria are relatively nonspecific.

1. Fever: The fever may rarely rise as high as 104°F, and is unaccompanied by chills.
2. Arthralgia: This complaint of joint pain occurs without objective joint findings. It cannot be used as a minor criteria if arthritis is used as a major criteria.
3. Previous history of rheumatic fever or rheumatic heart disease: which was documented by Jones' criteria.
4. Prolonged PR interval: This cannot be used as a minor criteria if carditis is used as a major criteria.
5. Positive acute phase reactants: Elevated ESR, CRP, or leukocytosis can be considered as a minor criteria.

If the Jones' criteria are met, then acute rheumatic fever can be diagnosed. Bed rest is recommended during the acute phase of the disease. Aspirin in a dose to maintain a blood level between 25 and 35 mg/dl, is used to suppress the inflammatory response. Steroids are indicated rarely, except in cases of fulminate carditis.

The duration of bed rest and aspirin therapy varies. In patients without carditis when clinical and laboratory signs of acute disease have subsided, ambulation and tapering of aspirin can begin. If carditis is present, bed rest as long as three months may be required, until the cardiac condition is stable and not progressing; and then aspirin should be tapered gradually. Rebound of the disease either clinically or by laboratory evidence of an increased sedimentation rate, may occur while the aspirin is being tapered. This may require an increase in dosage.

The child should also be treated for a Group A beta-hemolytic streptococcal infection and then placed on prophylactic antibiotics to prevent recurrence of rheumatic fever.

Congestive Cardiac Failure

Congestive cardiac failure is an important, but not common problem among children with cardiac disease. Eighty percent of the instances of congestive cardiac failure in childhood occur during the first year of life and these are almost always secondary to congenital heart disease. Common congenital cardiac lesions causing failure in infancy include: ventricular septal defect, patent ductus arteriosus, coarctation of the aorta, and endocardial cushion defect. Among instances occurring after a year, the cause is usually an acquired cardiac condition, such as acute rheumatic fever, glomerulonephritis, myocarditis, or cor pulmonale from cystic fibrosis.

The management of congestive cardiac failure in childhood is a four step process.

1. Recognition of Congestive Cardiac Failure

Congestive cardiac failure usually develops in an infant or child known to have a cardiac problem, but its development may be the initial indication of a cardiac problem.

The history provides clues to suspect congestive cardiac failure. The parents complain that their infants breathe hard, perspire freely, and tire when feeding. These three symptoms reflect the physiologic responses to cardiac failure of tachypnea, increased catecholamine excretion, and dyspnea on exertion respectively.

The cardinal findings of congestive cardiac failure are tachycardia, from the increased cardiac rate to compensate for reduced cardiac output; tachypnea, from pulmonary congestion; hepatomegaly, from systemic venous congestion; and cardiomegaly, from cardiac chamber dilatation. Cardiomegaly may be detected on either physical examination or chest Xray. Each of these four features must be present before a diagnosis of congestive heart failure can be made in an infant or child. Many infants or children with acute pulmonary disease may have tachypnea, tachycardia, and apparent hepatomegaly, because the diaphragm is depressed from hyperexpansion of the lungs, but cardiac size is normal.

The common findings in adults with cardiac failure of increased jugular venous pulse or peripheral edema are rare in infants.

2. Treatment of Congestive Cardiac Failure

Once the diagnosis of congestive cardiac failure has been made, treatment should begin promptly.

- a. The cornerstone of treatment is digitalization. Lanoxin is the preferred drug in children, because of its ready availability, rapid onset, and ease of administration.

To digitalize an infant or a child with Lanoxin, the total digitalizing dose is calculated according to: (1) Premature: 0.035 mg/kg. (2) >1 year: 0.05 mg/kg (3) <1 year: 0.04 mg/kg

Most infants and children are digitalized over a 24-hour period, giving one half the total digitalizing dose initially, one fourth in 6-8 hours, and the final one fourth in another 6-8 hours. If at 24 hours congestive heart failure is still evident, another one fourth may be given if there are no signs of digitalis toxicity. If the child is extremely ill, digitalization may be carried out over a period of 6-8 hours. Before each administration of a portion of the digitalizing dose, an electrocardiogram rhythm strip should be obtained to make certain the cardiac rhythm is normal.

At the end of the digitalization, maintenance is begun using one eighth of the total digitalizing dose, twice a day.

Absorption of the oral form is as rapid as the intravenous form. Lanoxin should not be administered intramuscularly because it causes muscle necrosis and is inconsistently absorbed.

- b. In most children with congestive heart failure, diuretics are administered. Lasix is commonly used and given in a dose of 1 mg/kg as a single dose. Much larger amounts may be given if there is no response.
- c. Bed rest: The energy requirements of the infant or child should be reduced. In an infant, placing him in a semi-upright position in an infant seat is helpful. For the critically

ill neonate, even the energy required for respiration may place great stress upon the circulation. In this circumstance, the neonate is pharmacologically paralyzed and placed on a ventilator.

It may be necessary to feed the infant by gavage since the act of sucking may fatigue him.

3. Identification of the Underlying Cause

Congestive cardiac failure is not a disease, but a symptom complex which results from an underlying cardiac problem. In distinction to adults, a cause can usually be defined, and these are usually treatable.

The cause of cardiac failure may be from nonstructural problems such as profound anemia, or paroxysmal atrial tachycardia, from structural abnormalities of the heart or from the effect of diseases of other organ systems, such as the kidney or lung, upon the heart.

The cause of the cardiac failure may be readily apparent from physical examination or simple laboratory work. Usually the presence of a murmur or abnormal electrocardiogram or chest Xray indicates a major criteria problem.

In most circumstances, it is necessary to transfer the infant or child with congestive cardiac failure to a cardiac center for further evaluation. Frequently cardiac catheterization and angiocardigraphy are performed to accurately define and assess cardiac status.

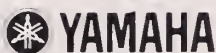
4. Treatment of Underlying Cause

With the continual improvement of cardiac operative techniques, more forms of congenital cardiac anomalies can be at least palliated and often corrected in neonates. Through prompt recognition and treatment of congestive heart failure, and transfer to a cardiac center, the results of treatment can be improved.

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The St. Paul Infant Apnea Program An Approach to the Evaluation and Treatment of Infantile Apnea

J. MICHAEL COLEMAN, M.D.*, CHRIS REARDON, R.N., M.P.H.*,
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Two hundred six infants with histories of apnea were referred to the St. Paul Infant Apnea Program. This paper describes their evaluation, management, and outcome. One hundred nine of 206 (53%) infants received home monitors. Thirty-two (29%) had subsequent apnea that required either stimulation or CPR. Two patients died of SIDS. Infants who experience significant apnea should be hospitalized for a detailed medical evaluation. Home cardiorespiratory monitoring has a role in the management of infants at risk for SIDS and is acceptable to most families who recognize its limitations.

SUDDEN INFANT DEATH SYNDROME (SIDS) is the leading cause of death between the ages of one month and one year. In Minnesota, SIDS is responsible for approximately 160 deaths per year, or 1-2 deaths/1000 live births (personal communication, Minnesota Sudden Infant Death Center, 1982). Infants known to be at a higher risk for SIDS include premature infants, siblings of SIDS victims, and infants who have experienced near-miss SIDS events.¹ Recent studies suggest a relationship between some cases of SIDS and infantile apnea.^{2,3} Although breathing irregularities are common in infancy, apnea greater than 15 seconds is distinctly abnormal.⁴ Some cases of apnea can be successfully treated with respiratory stimulants such as caffeine or theophylline. In many instances, electronic cardiorespiratory (CR) monitors must be used to document apnea and signal the need for intervention. While not all SIDS is infantile apnea and not all infantile apnea proceeds to SIDS, it is now clear there is an association.^{1,2,3} The St. Paul Infant Apnea Program was developed to investigate this association and to provide a systematic approach to the identification and management of infants at risk for life-threatening apnea. This report describes that program's first two years' experience.

Initial Evaluation and Management

From November 1980 through December 1982, 206 patients were referred to the Infant Apnea Pro-

gram, either from their primary physicians or from emergency rooms. Patients were classified according to their presenting symptoms: (1) 82 infants experienced apnea requiring stimulation or resuscitation, or had suspicious "apnea-like" events; (2) 54 infants were siblings of SIDS or near-miss SIDS victims; (3) 70 neonates had prolonged apnea in the newborn nursery.

Near-Miss SIDS/"Apnea-Like" Events

Fifty-two of the 82 infants in category 1 were classified as near-miss SIDS. These infants experienced life-threatening apnea that presumably would have been fatal without intervention. Twenty-one of the 52 near-miss episodes (40%) occurred while patients were awake. Seven of the remaining 30 infants had identifiable causes for apnea (three seizures; four upper airway obstruction). Twenty-three infants were considered normal.

All patients were hospitalized. Physical and neurological examinations were all normal. Laboratory studies included: complete blood count; urinalysis; blood sugar; serum sodium, potassium, and calcium. No biochemical abnormalities were noted. Two infants were anemic; in both, apnea improved following transfusion. Electrocardiograms screened for cardiac arrhythmias. Ectopic beats and sinus arrhythmias were common, and we considered them normal variants.

Electroencephalograms with vagal stimulation (ocular compression) ruled out seizures and/or vagal hyperactivity. Two infants experienced significant bradycardia during ocular compression. Both were treated with atropine; one improved.

Esophagrams evaluated gastroesophageal reflux (GER). Approximately 60% of these patients showed

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This work was supported by grants from the American Lung Association of Ramsey County, Powers Department Stores, and the Children's Hospital Association of St. Paul.

This material was presented in part at the Annual Meeting of the Northwestern Pediatric Society, September, 1981.

reflux to the cervical esophagus. Radiographic GER appeared with such regularity that we question its significance. Despite our reservations, all patients with significant GER were treated with orthostatic posturing (maintaining a 45 degree upright angle at all times). Two infants who continued to have severe GER and apnea received funduplications. In both, life-threatening apnea and bradycardia persisted, at times requiring cardiopulmonary resuscitation (CPR). Recently, several infants had continuous esophageal pH monitoring rather than esophagrams. One infant demonstrated simultaneous apnea and GER.

All patients had pneumograms and quantitative CO₂ response tests. Pneumograms are continuous 12-hour impedance recordings of respiration and heart rate. These tracings document abnormal breathing patterns, such as periodic breathing or prolonged apnea, and cardiac dysrhythmias. CO₂ response tests measure quantitative changes in minute volume while patients breathe 2% and 4% carbon dioxide (the specifics of this test are described elsewhere⁵). Fourteen infants (27%) had abnormal pneumograms; four (8%) had abnormal CO₂ responses. In two patients (4%), both tests were abnormal.

A history of significant apnea was the most important criterion to prescribe home monitors for this group of patients. Monitors were also prescribed if the history of the initial event was questionable and the pneumogram or CO₂ response test was abnormal. Monitoring was continued for at least three months. Monitors were discontinued when there was: (1) no clinical apnea for at least two months; (2) no apnea requiring stimulation for at least three months; (3) two consecutive normal pneumograms — one performed during the stress of an illness or immunization.

All 52 near-miss SIDS infants received CR monitors. Twenty-three infants (44%) subsequently had apnea that subsided only after stimulation. Three infants required CPR. One died despite CPR; permission for autopsy was refused. Another infant is 30 months old; she continues to have apnea requiring CPR.

Siblings of SIDS Victims

Sibling evaluation included a pneumogram and CO₂ response test performed at a mean age of three weeks. Forty-nine of the 54 siblings were evaluated as outpatients. Five were hospitalized. If the pneumogram was normal, it was repeated during the stress of the first illness or immunization. Eight patients (15%) had abnormal pneumograms. One patient had an abnormal CO₂ response test. Patients were monitored for a minimum of three months if either a

pneumogram or CO₂ response test was abnormal. Monitors were discontinued after three months without apnea, two normal pneumograms (one recorded during stress), and a normal CO₂ response test.

Fifteen of 54 infants (28%) were monitored. Five infants received CR monitors because of clinical apnea; eight were monitored because of abnormal pneumograms or CO₂ responses. Two infants were monitored because of extreme parental anxiety.

Two infants developed subsequent apnea. One required only occasional stimulation. The other, a 24-month old girl, has frequent apnea requiring CPR. Another infant died of SIDS at age three weeks prior to completion of the initial evaluation.

Prolonged Neonatal Apnea

These 70 neonates were patients in normal newborn or intensive care nurseries. Ten were full term; 60 were premature. In all infants, clinical apnea was the only reason for hospitalization. Ancillary causes for prolonged apnea, i.e., sepsis, anemia, seizures, or GER, had been excluded. All had abnormal pneumograms.

Patients were first treated with caffeine citrate (5-7 mg/kg/day po). Doses were adjusted to maintain serum levels of 8-20 mcg/ml. If pneumograms became normal after therapy, patients were discharged with caffeine therapy alone. If pneumograms improved but remained abnormal, caffeine was continued, and patients were discharged with monitors. If pneumograms remained abnormal and did not improve, caffeine was discontinued and patients were sent home with CR monitors. Patients treated with caffeine had drug levels measured at least every two weeks.

Criteria for stopping caffeine were: (1) no clinical apnea for one month; (2) one normal pneumogram performed at a subtherapeutic caffeine level. CR monitors were discontinued using the same criteria as group I.

All ten full-term neonates were monitored. None had subsequent apnea requiring stimulation. Thirty-two of the 60 premature infants (53%) were monitored with or without caffeine. Seven infants (22%) later developed apnea requiring stimulation. None of these infants ever required CPR.

Twenty-eight premature infants (47%) were discharged with caffeine alone. One infant died of SIDS.

Follow-Up Care and Parent Education

Prior to discharge, parents are taught the practical and technical aspects of CR monitoring as well as indications for and use of medications. Parents learn

to observe and record abnormal events and how to respond to monitor alarms effectively and efficiently. Parents and others directly involved in the infant's care are taught CPR by certified instructors. The evening before discharge with a monitor, at least one parent rooms in and provides all care for the infant.

Following discharge, frequent telephone contact is maintained with each family. Physicians, nurses, and technicians are available 24 hours daily to provide medical advice regarding home monitoring. Questions about other medical problems are referred to infants' primary physicians.

Follow-up pneumograms are recorded in the home every two months or more frequently when indicated. Parents record all alarms on a log which is regularly reviewed by the Infant Apnea Program. Neurological and developmental follow-up is provided at regular intervals until four years of age. A support group for parents of monitored infants meets monthly. Here, parents discuss the stresses and anxieties associated with home monitoring and often share practical hints.

Discussion

Infantile apnea is a real, potentially lethal problem. Infants who experience significant apnea or cyanosis should be hospitalized without delay. Apnea and/or cyanosis are significant when they are associated with changes in muscle tone and subside only after vigorous stimulation or CPR. These events occur during sleep and while awake, and can recur at any time. Such infants need immediate CR monitoring and must be cared for by persons skilled in CPR. Detailed histories, physical examinations, and a few basic laboratory studies are necessary before appropriate therapy can be provided. Patient histories are extremely important. Recommendations for monitoring are often based solely on parents' descriptions of apneic events.

In the past, the evaluation and treatment of infantile apnea was more often than not haphazard. Common ancillary causes of apnea — such as infection, anemia, seizures, or GER — were overlooked. Monitors were prescribed arbitrarily without specific plans for follow-up care and without adequate parental education. The ramifications of home monitoring were

not fully appreciated. This sorry state of affairs prompted critics to question the value of home monitoring justly focusing attention on the burden it placed on patients' families.⁶

Our experience was quite different. For most families in the St. Paul Infant Apnea Program, the CR monitor was a comfort, not a burden. If families have structured follow-up plans, adequate instruction, and an organized support system, then the care of the home-monitored infant should be no more stressful than the care of any other infant with a long-term, but self-limiting, disorder.

During its first two years, the St. Paul Infant Apnea Program evaluated more than 200 patients. One hundred nine (53%) were monitored in their homes. Nearly fifty percent of the infants diagnosed as near-miss SIDS had subsequent apnea requiring some type of intervention. Three required CPR. One infant died despite the CR monitor and despite CPR. Do CR monitors really protect infants from sudden death? In this case, it did not. In 31 other cases where apneic infants were successfully revived, likely it did. Whether or not home monitoring is truly effective cannot be determined without a controlled study of near-miss SIDS victims, monitored and unmonitored. We doubt if such a study could ever be ethically justified or, if it was, if any parent would ever agree to participate. Until there is convincing evidence to the contrary, we believe that all patients known to be at risk for infantile apnea or SIDS should be enrolled in organized home monitoring programs.

If controlled monitoring studies cannot be done, how shall we investigate this problem? Recently, Shannon and others described significant respiratory control abnormalities in near-miss SIDS victims and siblings of SIDS victims.⁷ Their findings raised many clinically relevant questions that need answers. Such clinical studies should be the focus of our SIDS research efforts. Studies of living high-risk infants are far more satisfying and potentially more productive than autopsy studies of SIDS victims.

Acknowledgment

The authors thank Pam Stading, R.N. and Sue Tabbert, R.N., instructors in the Infant Apnea Program; and Marietta Sattler for her secretarial assistance.

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Human Cardiac Transplantation at the University of Minnesota

JOSEPH R. SCHNEIDER, M.D.*; DAVID ALYONO, M.D.*; JEFFREY R. SCHWARTZ, M.D.*; T. BARRY LEVINE, M.D.*; JAY N. COHN, M.D.*; J. ERNESTO MOLINA, M.D.*; ROBERT W. ANDERSON, M.D.*; JOHN S. NAJARIAN, M.D.*; R. MORTON BOLMAN, III, M.D.*

The results of cardiac transplantation at the University of Minnesota are presented. Ten of 21 patients transplanted are currently alive at periods of up to 60 months post-transplant. Current expectations for cardiac transplantation include one year survival of approximately 70% and may be better with the initiation of Cyclosporin A immunosuppression. The most common cause of death in the first year following cardiac transplantation continues to be infection. Cardiac transplantation is an effective treatment for end-stage cardiac failure.

THE HISTORY OF HUMAN cardiac transplantation now includes nearly two decades.^{1,2} After an initial worldwide flurry of activity in cardiac transplantation, including 100 cases in 1968, there was an equally rapid decline in activity during the late 1960s because of a poor outcome in most of the cases.³ A few centers, most notably Stanford University, the Medical College in Virginia, and Groote Schuur Hospital in Cape Town, South Africa, continued to perform a small number of transplants each year. It was clear that these transplants could be expected to function, and function well, in the immediate post-operative period, but most patients succumbed to complications during the first few months post-transplant. Rapidly improving knowledge in post-operative care, including management of immunosuppressive regimens and prevention and treatment of opportunistic infections, which were the major cause of death in these patients, was associated with continuing improvement and survival. The Stanford group was able to achieve a 20% one year survival in the patients receiving transplants in 1968, but by 1977 they were able to achieve a one year survival of nearly 70%.⁴ The decision was made to begin a program of human cardiac transplantation at the University of Minnesota at that time. This report describes the experience in that program.

Materials and Methods

Patients considered for cardiac transplantation include outside referrals, as well as patients from the

Cardiology Services at the University of Minnesota Hospitals and the Minneapolis Veterans Administration Medical Center. All patients accepted as candidates for cardiac transplantation are victims of advanced cardiac failure, New York Heart Association Functional Class IV, and for whom no other form of medical or surgical treatment is available. The expected survival of these patients is much less than one year, and in several cases the patient has been in extremis at the time of referral. Contraindications to cardiac transplantation include active infection, pulmonary hypertension with pulmonary vascular resistance exceeding 8-10 Wood Units, recent pulmonary infarction⁴, significant disease of other major organ systems, and diabetes mellitus. Although an upper age limit of 55 years was originally selected, a few patients older than 55 years, who appeared otherwise vigorous, have been accepted for transplantation. Currently, the upper age limit is approximately 50 years of age. Patients who are thought to be unreliable and in whom follow-up and adherence to the necessarily strict behavioral and medication protocol would be inadequate, are also rejected. Patients satisfying these criteria are accepted with the consensus of the Cardiology and Cardiovascular Surgery staff.

When a donor becomes available, all potential recipients are crossmatched against that donor. If more than one recipient is available, the candidate with the shortest predicted survival without transplantation is offered the procedure.

All operations have been performed at the University of Minnesota Hospitals. The operation is performed according to the technique of Lower and Shumway^{5,6}. During the first part of the period of this study, patients received an immunosuppressive regi-

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This work was supported by NIH grant #AM13083.

men including azathioprine, prednisone, and antilymphocyte globulin. Later patients in the series received cyclosporin A with prednisone. Nearly all patients received several perioperative intravenous boluses of methylprednisolone. The patients spend a variable amount of time in the Surgical Intensive Care Unit, but generally are transferred to the ward approximately one week following their operation. In addition to daily laboratory studies and chest x-rays, each patient has daily 12-lead electrocardiograms performed and frequent transvenous endomyocardial biopsies⁷ to anticipate any impending rejection crises. Rejection crises have been treated with an increase in the dose of corticosteroids, or with a combination of an increased dose of corticosteroids plus antilymphocyte globulin. In addition, all patients are maintained on dipyridamole prophylaxis against chronic vascular rejection.⁸ Longterm follow-up includes yearly admission to the hospital for transvenous endomyocardial biopsy, thermodilution cardiac output determination, and coronary arteriography.⁹ The latter is performed because these patients would be expected to have no angina pectoris if they developed coronary artery stenoses, since the transplanted heart is denervated. These patients have experienced untoward events, including painless myocardial infarction and sudden death.

Donors are generally victims of motor vehicle accidents with closed head injuries, victims of urban violence, or patients who suffer cerebrovascular catastrophes. They must not have any known malignancies outside the central nervous system and must be infection-free. They are generally less than 40 years of age and should be well matched to the recipient by weight (ideally within 10-20 kilograms).

Results

Fifty-two patients have been evaluated for cardiac transplantation since 1978. Of these, 21 patients have undergone cardiac transplantation. There have been 17 males and four females with ages ranging from four to 58 years with a mean of 35.4 years and a median of 36.9 years. The underlying disease has been cardiomyopathy in 15 patients, coronary artery disease in 4 patients, myocardial infarction following aortic valve replacement in one patient, and one patient had uncorrectable congenital heart disease. There have been 19 whites and two blacks transplanted. Four of the patients have been younger than 18 years of age.

Ten of these patients are currently alive at periods ranging from two weeks to 60 months post-transplantation. Of these, five are more than one-year

post-transplantation, and all five of these patients have returned to essentially full activity and are New York Heart Association Functional Class I at this time. The most common cause of death has been infection, and in each case, the infection was "opportunistic". The first and fifth patients in the series died with *Aspergillus* brain abscess; the second patient died with *Proteus* pneumonia and sepsis; and the seventh patient died with mediastinitis and sepsis with multiple gram negative organisms. The fifth patient in the series died 39 days post-transplant with an aggressive, rapidly progressing lymphoma, similar to the lymphoma seen in renal transplant recipients, thought to be related to Epstein-Barr virus infection¹⁰. Two patients have died in the perioperative period with intracranial hemorrhage. The first of these patients was fully anticoagulated at the time of transplant because of a recent pulmonary embolus and suffered massive intracerebral and subdural hemorrhages on the first postoperative morning. We have no explanation for the unfortunate death of the other patient, except one must always consider the possibility of air embolism when a cerebrovascular accident occurs at the time of open heart surgery. Two patients have died in the perioperative period because the transplanted heart simply could not support the circulation. Only two deaths could be attributed to rejection of the transplanted organ.

Discussion

In spite of a highly successful renal transplantation program, the University of Minnesota was reluctant to become involved in cardiac transplantation because of the initial results from the active centers. When it became clear that good results could be obtained, the decision was made to initiate a cardiac transplantation program at the University of Minnesota. There has been a gradual increase in the number of patients transplanted each year, so that now activity is fairly constant with seven transplants already performed between January 1 and August 8 of 1983. There has been a concomitant renewal in research activity in large animal cardiac transplantation since it is our belief that acceptable results and continued improvement in human cardiac transplantation depend heavily on a continued vigorous research effort. We are presently extending our research program to heart and heart-lung transplantation in primates.

Skepticism about cardiac transplantation persists, both within and outside the medical profession because it is perceived to be too expensive in this era of rapid increases in health care costs. When one examines the course of the disease in patients who are

cardiac transplant candidates, it becomes apparent that these patients are truly "end-stage". Mortality in a group of patients accepted for transplantation at Stanford, but who did not receive a transplant within three months following their acceptance into the program was 90%. On the other hand, the published one year survival in transplant recipients at Stanford is approximately 70%, and with the use of cyclosporin A, is in the area of 80%.¹¹ In addition, the results in the authors' series of patients, as well as those of others,¹²⁻¹⁴ show that these patients not only survive, but enjoy excellent rehabilitation. A recent review of 106 patients in the Stanford series who survived one year or more following transplantation found 103 (97%) were in New York Heart Association Functional Class I, 2 were in Class II, and 1 was in Class III. Eighty-seven patients (82%) were classified as rehabilitated, defined as restoration of overall functional capacity sufficient to provide the patient an unrestricted option for return to active employment or any activity of choice.¹⁵ The contrast is even more striking when one recognizes that this group of patients tends to be young and that no other major organ system diseases are present because of the selection process. Most of these patients can be expected to return to productive roles in society. We believe

that the investment of roughly \$75,000 for a cardiac transplant is more than repaid to society. Even if the costs are not justifiable on purely economic grounds, as Drs. Pluth and Kaye have stated, "In competing for 'effective' national health dollars, cardiac transplantation becomes a bargain and for physicians, the argument for symptomatic relief pales in comparison with that for preservation of life".¹⁶

Addendum

Since this article was submitted for publication, seven additional cardiac transplants have been performed at this institution. Fourteen of the twenty-eight recipients are presently alive and well. Infection continues to be the major risk to these patients with three of the four most recent deaths being caused by fungal or viral sepsis, all within the first six months following transplantation. The fourth death, in a four-year-old child, was due to pulmonary hypertension and right ventricular failure. This patient was not able to be weaned from cardiopulmonary bypass and died in the operating room. This child represents an error in selection in that the magnitude of irreversible changes in the pulmonary microvasculature was not appreciated prior to transplantation.

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Price Competition and the Teaching Hospital — Vanselow (page 217).

BOOK REPORT

Review of Basic and Clinical Immunology by Stites, Stobo, Fudenberg, and Wells. Lange Medical Publications. \$22.00.

This is the fourth edition of the "Basic and Clinical Immunology" text, previous updates having been published every two years. The book is divided into three major sections: Basic Immunology, Immunologic Laboratory Tests, and Clinical Immunology.

The Basic Immunology section goes through chapter-wise in a systematic fashion the history, histology, biochemistry, physiology, and aberrancy on occasion of the human immune system. The biochemical and pathophysiological occurrences are delved into in considerable detail, aided successfully by well-constructed diagrams with, for the most part, self-explanatory captions. The electron microscope is used extensively for the purpose of illustration. Much ground is covered in this 324-page section, the last half of which switches from an *in vitro* to an *in vivo* orientation. The facts are presented concisely throughout and in rapid succession.

The Laboratory section gives a very interesting presentation of the many immunologic studies available using extensive diagrammatics and photographs to illustrate the subtly differing mechanisms. The subheadings include information on the techniques as well as the clinical usefulness of the studies described, each an appropriate prelude to the upcoming Clinical Immunology section.

The Clinical Immunology section is laid out in a system-oriented manner, each chapter covering the

clinical pathology of individual organ systems from an immunologic viewpoint. The basic elements of the immune system covered in previous sections are pulled together for a wide range of both common and uncommon diseases seen in clinical practice. As is the custom with the Lange series, most of the subheadings are followed by a brief summary outline including important clinical and laboratory findings, facilitating a quick review of the high points of previously read sections. Clinical diagnosis and therapy are covered in an up-to-date, relevant though brief manner. The final experimental immunotherapy chapter is factual with extensive quotation of current literature and noticeably nonpartisan. The "Appendix" and "Acronyms and Abbreviations" sections serve as necessary reference additions in a field where exclusive terminology is abundant. The index spans 216 pages, is adequately detailed, and serves a crucial role in finding the many intricate facts presented in the text.

The usual high standards of the Lange publications are well upheld with this edition. In a field such as immunology, with much intricate and specialized information becoming available on an ongoing basis, "Basic and Clinical Immunology" will serve as a good summary and reference work for those wishing a clinically oriented overview concisely written. All in all, the authors have done a commendable job in compiling this very useful information source.

Wayne E. Imber, M.D.
Mayo Clinic

Seventh Annual Black Hills Seminar

The Seventh Annual Black Hills Seminar on Advances in Clinical Pediatrics — June 20, 21 and 22, 1984, at Sylvan Lake Resort, Custer, South Dakota, sponsored by the Department of Pediatrics and Adolescent Medicine, University of South Dakota School of Medicine. Guest faculty include Drs. Frank Oski, John Scanlon, Dan Levin, Robert Vernier and H. David Wilson. For complete conference information contact:

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On Ellis Island, where the ancestors of nearly half of all Americans first stepped onto American soil, the Immigration Center is now a hollow ruin.

Inspiring plans have been developed to restore the Statue and to create on Ellis Island a permanent museum celebrating the ethnic diversity of this country of immigrants. But unless restoration is begun now, these two landmarks in our nation's heritage could be closed at the very time America is celebrating their hundredth anniversaries. The 230 million dollars needed to carry out the work is needed now.

All of the money must come from private donations; the federal government is not raising the funds. This is consistent with the Statue's origins. The French people paid for its creation themselves. And America's businesses spearheaded the public contributions that were needed for its construction and for the pedestal.

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Price Competition and the Teaching Hospital

NEAL A. VANSELOW, M.D.*

THE TEACHING HOSPITAL has long served both as a cornerstone of our system of medical education in the United States and as a very important component of our system of health care delivery. Tracing its roots to the time of the American Revolution, it has provided clinical education and training to many generations of medical students, house officers, and other health professionals. Teaching hospitals have also represented a primary locus for clinical research and have offered patient care services which other hospitals are unable or unwilling to provide — services which range from primary care for the indigent to the most complex tertiary care.

Despite the fact that most physicians would find it hard to imagine an educational program without experience in a teaching hospital, some experts now feel that the future of this institution is threatened^{1,2}. A combination of factors including price competition, decreased support from government, and a projected physician surplus has placed new pressures on teaching hospitals which at worst could threaten their existence and at best result in a drastic alteration of their priorities. This paper will analyze these pressures and examine possible steps which teaching hospitals and their affiliated medical schools might take to adjust to them.

Teaching Hospitals and Their Mission

There are more than 7000 hospitals in the United States. Of these, approximately 1250 operate residency programs (18%) and almost 1000 are affiliated with medical schools (14%)³.

Teaching hospitals constitute a very diverse group, ranging widely in both size and ownership. Sixty-five are university-owned, and approximately 150 are owned by the federal government. Of the remainder, 80% are under private control with the other 20% owned by state or local government.

Teaching hospitals provided clinical rotations in 1981-82 for almost 50,000 medical students and over 65,000 house officers. It is more difficult to quantify the important role they serve in patient care, but several facts should be noted. In 1980, the 329 members of the Council of Teaching Hospitals of the As-

sociation of American Medical Colleges constituted only 6% of the non-federal short term hospitals in this country but provided 47% of the nation's charity care³. The complexity of care delivered in many teaching hospitals is illustrated by the fact that in 1980 these same 329 hospitals performed 45% of the nation's cardiac catheterizations, 50% of its open heart surgery, and 35% of its C.T. head and body scans³.

Problems Faced by the Teaching Hospital

The most serious problem facing teaching hospitals in a price competitive marketplace is that they are more expensive to operate than their non-teaching counterparts^{4,5}. A number of recent developments in the delivery and financing of health care have placed the teaching hospital at a significant disadvantage. These include: recent action by the federal government to replace the reimbursement of hospitals on the basis of allowable cost with a prospective payment system based on Diagnosis Related Groups (DRGs); the development of preferred provider organizations (PPOs) and health maintenance organizations (HMOs); and, bid/contract arrangements with providers such as California has instituted for its Medicaid program. Teaching hospitals have difficulty competing on the basis of price not because they are disinterested in cost containment but because their mission and patient mix burdens them with expenses which non-teaching hospitals do not have. These incremental costs fall into four categories:

1. *costs associated with education and training.*

These include the direct costs of trainee stipends, faculty salaries, and classroom space as well as the indirect costs associated with the inefficiencies inherent to a teaching setting and the increased use of ancillary procedures which accompanies education^{6,7}. Incremental costs are increased in both the inpatient and outpatient setting but are particularly significant in the latter. In recent years both private and governmental third party payors have been increasingly reluctant to reimburse teaching hospitals for expenses associated with education and training;

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2. *the costs of clinical research.* While most research grants and contracts reimburse teaching hospitals for direct expenses, funding is often not available to support the creation and maintenance of the complex in-hospital environment needed to support many of these studies;
3. *case mix and severity of illness.* There is good data to show that, in general, teaching hospitals attract patients with more severe and complex illnesses than non-teaching hospitals. Prospective payment plans such as DRGs and Minnesota Blue Cross' AWARE program provide only limited incremental reimbursement for this expensive care, largely because there are no generally accepted standards for measurement of the severity of illness. In the past, teaching hospitals have subsidized their tertiary care programs by charging higher prices for primary and secondary care, but this will no longer be possible under prospective reimbursement;
4. *indigent care.* The burden which teaching hospitals have traditionally assumed for care of the indigent has become more severe in recent years due to cutbacks in government support for these programs. As it becomes more difficult to shift the costs of indigent care to paying patients, many teaching hospitals have been forced to limit the care they provide to the poor⁸.

Some teaching hospitals have also experienced trouble in adapting to a price-competitive environment because they are owned by an agency of government. As a result, they have found it difficult to initiate the broad range of innovative steps which many privately owned hospitals are taking to adjust to new developments in health care delivery and health care financing⁹⁻¹¹. It is much more difficult, for example, for a county-owned or state-owned hospital to initiate programs of diversification or of horizontal or vertical integration with other health care providers than it is for hospitals in the private sector. Many government-owned hospitals are also burdened with rules and requirements which do not apply to their private competitors. Two examples from the past year illustrate this point vividly. The University of Minnesota Hospitals and Clinics, as a state institution, was the only acute general hospital in Minnesota to be required by law to comply with the "Buy Minnesota" and "comparable worth" legislation enacted by the 1983 session of the State Legislature. It is estimated that these requirements could significantly increase University Hospitals' costs in the physical plant and personnel categories respectively. Since only 7% of University Hospitals' revenue is received in the form

of direct state subsidy, most of this increase must be recovered in the form of additional charges to patients.

A final factor which could have an adverse impact on the teaching hospital is the impending surplus of physician manpower. In its 1980 report, the Graduate Medical Education National Advisory Committee (GMENAC) predicted a nation-wide surplus of 70,000 physicians by 1990 and 145,000 physicians by the year 2000¹². In Minnesota, a 1982 survey by the Minnesota Medical Association demonstrated clearly that an increasing percentage of physicians is becoming convinced that there are too many doctors in their communities¹³. In such an environment, hospitals which now conduct teaching programs as a device to recruit and retain medical staff, might decide that the incremental costs involved are no longer justifiable. Medical schools, under budgetary constraints and pressures to reduce class size, might determine that they no longer need as many teaching hospitals, and governmental subsidies to teaching hospitals could diminish or disappear.

Some Possible Outcomes

The financial pressures associated with price competition and decreased governmental subsidies for teaching and research will almost certainly lead to a decrease in the number of teaching hospitals in the United States. Some teaching hospitals may face money problems which will force them to close, while others are likely to conclude that a teaching status is not worth the price and will voluntarily discontinue their education and training programs.

It is also safe to predict that those hospitals which continue to teach medical students and house officers will find themselves under great pressure to become more like non-teaching hospitals. Patient care programs which do not pay for themselves may be discontinued in spite of their educational value. To increase efficiency and minimize length of stay, attending physicians will become more directly involved in the care of their patients, leaving fewer decisions to the house staff. In short, the emphasis in both teaching and non-teaching hospitals increasingly will be on minimizing costs and marketing profitable "product lines". Education and research will be given lower priority than the requirement to deliver health care at competitive prices. While this change in emphasis has many positive features, there is no question but that it will have a profound effect on both the quality and quantity of clinical training opportunities available to students.

Potential Solutions for the Teaching Hospital

There is no single or easy solution to the dilemma which many teaching hospitals are facing, but there are a number of steps which they should consider.

First and foremost, teaching hospitals, like their non-teaching counterparts, must make vigorous efforts to keep their costs down. While there are many legitimate incremental costs inherent to teaching and research, it is also evident that many expensive but traditional practices in teaching hospitals have actually been counter-productive in terms of both quality education and good patient care. For example, those who have spent time on a clinical teaching service are only too familiar with the problem faced by the house officer who has neglected to order some obscure laboratory test which the attending physician later requests on rounds. As a result, some house officers protect themselves from criticism by ordering an excessive number of ancillary procedures at a significant cost to the patient¹⁴. This practice more often than not represents poor quality as well as expensive care. It is in the best interests of all to do away with it.

Fortunately, many teaching hospitals and medical schools have already taken steps to place greater emphasis on the *judicious* use of diagnostic and treatment procedures and to inform both attending staff and students of the cost implications of their decisions. At the University of Minnesota Hospitals and Clinics, for example, a Cost Containment Task Force comprised of senior faculty and administrators has recently completed an extensive study of ways in which costs can be reduced without an adverse effect on either the educational program or the quality of patient care.

Those teaching hospitals which are in difficulty because of government ownership or a burdensome and unwieldy governance structure should consider modification which will better equip them to function effectively in the modern health care marketplace. The University of Florida, for example, has transferred ownership of its Shands Teaching Hospital to a separate non-profit corporation. While the corporation is structured to ensure considerable University influence over decision-making, the new organization

is expected to permit greater flexibility and more efficient operation than was possible under state ownership. A less drastic step has been taken at the University of Minnesota where the Board of Regents has established a Hospital Board of Governors and delegated significant authority to it, including responsibility for the important areas of personnel and purchasing.

Teaching hospitals must also develop creative ways to relate to each other and to the newer non-traditional health care delivery organizations which are emerging in every state. While it may be inherently difficult for a teaching hospital to contract with an HMO, it is not impossible. Careful attention to the HMO's needs and the development of safeguards to prevent unauthorized care or consultations can lead to a mutually beneficial relationship between the two organizations. Horizontal collaborative arrangements between teaching hospitals such as those being developed in New York City and Boston can reduce costs as can formal programs of regionalization like the one in Rochester, New York. Teaching hospitals should also explore ways to develop vertically-integrated programs of patient care, either by contracting with nursing homes and home health care agencies or by developing these programs and facilities themselves.

Finally, it is imperative that medical schools and teaching hospitals work with professional organizations and citizen groups to convince public policy makers that American medicine will not retain its traditional excellence unless alternative ways are found to finance clinical education and training. If we are no longer willing to use the patient care dollar to help cover the cost of educating tomorrow's physicians, other financing mechanisms must be devised. While students may be able to bear some of this burden in the form of higher tuition, they cannot bear it all. In the last analysis, the benefits of quality medical education accrue not just to the practitioner but to all of society as well. The inescapable conclusion is that, as is the case with other components of the educational system, a portion of the cost of operating a teaching hospital is the responsibility of government.

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9-14. Will be found on page 211

An added complication... in the treatment of bacterial bronchitis*

Increasing incidence
of ampicillin resistance in
Haemophilus influenzae

Ampicillin Resistant
Haemophilus influenzae

H. influenzae

S. pneumoniae

Brief Summary. Consult the package literature for prescribing information.

Indications and Usage: Cefaclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:
Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci). Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organisms to Cefaclor.

Contraindication: Cefaclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics, including Cefaclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions, General Precautions: If an allergic reaction to Cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Cefaclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures, when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Cefaclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Cefaclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinistest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy:—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cefaclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers:—Small amounts of Cefaclor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.19, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one

Some ampicillin-resistant strains of *Haemophilus influenzae*—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Cefaclor.¹⁻⁶

In clinical trials, patients with bacterial bronchitis due to susceptible strains of *Streptococcus pneumoniae*, *H. influenzae*, *S. pyogenes* (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Cefaclor.⁷

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Pulvules®, 250 and 500 mg

hour. The effect on nursing infants is not known. Caution should be exercised when Cefaclor® (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children:—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions: Adverse effects considered related to therapy with Cefaclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients; and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 2 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis, arthralgia and, frequently, fever) have been reported. The reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cefaclor. Such reactions have been reported more frequently in children than adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome. Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 10 patients).

Causal Relationship Uncertain:—Transient abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic:—Slight elevations of SGOT, SGPT, or alkaline phosphatase (1 in 40).

Hematologic:—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young child (1 in 40).

Renal:—Slight elevations in BUN or serum creatinine (less than 500) or abnormal urinalysis (less than 1 in 200). (D6178)

*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.

Note: Cefaclor is contraindicated in patients with known allergy to cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Letters to the Editor

Dear Dr. Reece:

Your editorial on freestanding clinics in the Minneapolis/St. Paul area leaves a considerable amount to be desired. It is an example of poor journalism that would be completely unacceptable to anyone other than an uncensored Editor in Chief.

As Chief of the Emergency Medicine Department at St. Paul-Ramsey Medical Center and one of the prime developers of ReadyCare, I object to the use of unattributable quotes as representative of the hospital from which they originated. Any journalist who uses unattributable quotes for other than opinions must, at a minimum, check out some of the facts, and that you have apparently not done. St. Paul-Ramsey Medical Center is not "Ramsey County Hospital" and ReadyCare is not the "Ready-Care Unit". We have a basic charge of \$30.00, not \$15.00 and in and out turnaround time on the average of 45 minutes, not 30 minutes. We have advertised on radio and in the newspaper, not in "nothing but bus placards", which in our opinion was the most ineffective of our advertising efforts. If your editorial has as many mistakes regarding the other hospitals as it does for St. Paul-Ramsey Medical Center, I would suggest that your sources of information are quite unreliable.

I have no objection to your mentioning ReadyCare and quoting St. Paul-Ramsey Medical Center, if you are willing to use a spokesman for the hospital or the Emergency Medicine Department that truly is a spokesman. If not, I would suggest that you quote the name of the physician from that hospital that made such a statement. To do other than that is grossly unfair and inaccurate.

It is the intent of ReadyCare to continue to have the hospital be the health care center of the community. When a patient gets sick and his personal physician is not available, we would like him to come to the hospital for that service and receive timely, quality service at a price that is competitive with a physician's office.

Thank you for your consideration.

James J. Cicero, M.D.
Chief, Emergency Medicine
St. Paul-Ramsey Medical Center

EDITOR'S COMMENT: Thank you for your letter and for pointing out the minor errors in names and fees. The physician to whom I spoke at St. Paul-Ramsey Medical Center was enthusiastic about your ReadyCare services, and I have no doubt your services are excellent. I intend to remain "uncensored," to protect my sources, to publish the most critical letters without editing them. If you consider these practices "grossly unfair," so be it.

Vertical Covers for Minnesota Medicine

We have tried the vertical cover format, and it has been very well accepted. The Medical Association has suggested that we continue this format. If you have any vertical 35 mm slides of fall and winter scenes, please send them to me.

Bruce Nydahl, M.D.
Cover Editor

Spring X-ray Workshops Cancelled

No workshops will be offered this spring. New curriculum is now being written to offer a better educational experience to those taking x-rays in physician's offices. Look for future announcements of the X-Ray Operator Workshops for Safe, Practical Radiography.

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Raynaud's Syndrome

JANAHN SCALAPINO, M.D.* and HARVINDER S. LUTHRA, M.D.*

IN 1862, MAURICE RAYNAUD described 25 patients with episodic pallor, cyanosis and superficial gangrene of the digits which he believed to be due to vasospasm. Since then this entity has been well recognized and named after him. By convention, the actual event itself often is termed Raynaud's phenomenon. Raynaud's syndrome refers to the phenomenon when associated with a specific disease such as scleroderma; when no association can be discovered after two to three years, it may be called Raynaud's disease. Other authors find such distinctions unnecessary, preferring Raynaud's syndrome, qualified by a phrase defining any associations. Classically, the patient will complain of cold or stress induced blanching of the fingers or toes followed by cyanosis. There is frequently pain with the erythema on rewarming. The triphasic response is unusual, however, at least two of the three color changes should be present to warrant the diagnosis.

The pathogenetic mechanisms responsible for the digital ischemia have not been well identified. There is evidence for local cold hypersensitivity at the level of the digital arteries. While it is thought that increased sympathetic tone and decreased resting blood flow may also contribute, this has never been conclusively demonstrated. Certainly where there is already compromise of the vessel lumen, as in atherosclerosis, previous frostbite injury or scleroderma with cellular proliferation and thickened basement membrane changes, decreased blood flow will occur more readily with even minimal vasoconstriction. It has been suggested that hyperviscosity or microthrombi of platelets and fibrinogen may also play a role.

Raynaud's phenomenon is associated with numerous systemic and local conditions. In one large referral center series, a connective tissue disease was present in 50% of their patients with Raynaud's. There was a history of arterial obstruction or trauma in about 10% of the cases, 10% were associated with miscellaneous disorders, such as vinyl chloride disease, chronic renal failure, malignancy and endocrine dysfunction, and 30% were idiopathic. Although uncommon, potentially reversible symptoms might be

medication induced. Specifically, one should inquire about ergot derivatives, beta-blockers or birth control pills. It is likely that the incidence of idiopathic Raynaud's syndrome (Raynaud's disease) is substantially underestimated, as many patients with mild disease may not come to the attention of a physician.

Raynaud's syndrome (RS) is a common feature of many connective tissue diseases. The incidence of Raynaud's syndrome in scleroderma is 90%, and its absence in a patient with otherwise suggestive changes, should prompt consideration of rarer etiologies such as scleredema, amyloid or porphyria. In SLE it is found in approximately 20% of patients, 85% of patients with overlap syndrome and 7-10% with rheumatoid arthritis may have Raynaud's syndrome. It has also been described with dermatomyositis, Sjogren's syndrome, and several of the small vessel vasculidities, hence it is not a distinguishing feature of any particular rheumatic disease. Questioning for skin changes, esophageal dysfunction, arthritis, muscle weakness, etc, may elicit a more specific constellation of symptoms, pointing to a diagnosis.

Laboratory examinations should include a complete blood count, chemistry group, urinalysis and perhaps an antinuclear antibody screen. More extensive testing such as complement levels, thyroid function, cryoglobulins, antinuclear DNA antibody, esophageal motility or other x-ray studies, rheumatoid factor, extractable nuclear antigen antibody, etc, may be useful depending on positive features of the history or physical examination.

For most patients, the presence of RS is merely a nuisance, although rarely the digital ulceration leads to life or limb threatening complications. Conservative therapy consists of cold avoidance, with the use of warm gloves, headgear and foot wear as the cold weather sets in, and oven mitts for taking food from the freezer. Patients who smoke should be urged to quit, and the drugs mentioned above withdrawn or used only with caution. Many rheumatologists empirically advise their patients to take one aspirin tablet daily for its anti-platelet effects, although there is no support for this in the literature.

Drug treatment is undertaken when the attacks are frequent or severe. Many patients feel that the inconvenience of taking pills is worthwhile during the win-

*Division of Rheumatology, Department of Internal Medicine; Mayo Clinic; Rochester, Minnesota.

ter months. Unfortunately, there is no universally successful medication. The calcium channel blocker, nifedipine, from 10 mg three times daily to 30 mg four times daily is the latest vogue, but success is mixed and side effects of nausea and dizziness common. Other remedies occasionally useful include bio-feedback, prazosin, or topical nitroglycerin ointment. Plasmapheresis and infusions of prostacyclin

are being used experimentally in some centers. Older more invasive methods such as intraarterial reserpine or guanethidine, or surgical sympathectomy are used only rarely at most centers. Infrequently, in SLE the syndrome will respond to systemic corticosteroids administered for other complications. Spontaneous improvement has been reported during pregnancy or with menopause.

References

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2. Coffman JD: Vasodilator drugs in peripheral vascular disease. *NEJM* 300:713, 1979.
3. Franks AG: Topical glyceryl trinitrate as adjunctive treatment in Raynaud's disease. *Lancet* 1:76, 1982.
4. LeRoy EC: Scleroderma (systemic sclerosis). *Textbook of Rheumatology*. Edited by WN Kelley, ED Harris Jr, S Ruddy, CB Sledge. Philadelphia: W. B. Saunders Co, 1981 pp 1217-1218.
5. Rothfield N: Clinical features of systemic lupus erythematosus. *Textbook of Rheumatology*. Edited by WN Kelley, ED Harris Jr, S Ruddy, CB Sledge. Philadelphia: WB Saunders Co, 1981 pp 1117-1118.
6. Smith CD, McKendry RJR: Controlled trial of nifedipine in the treatment of Raynaud's phenomenon. *Lancet* 2:1299, 1982.

Physician's in the News

Harold B. Leppink, M.D. was given the Albert Justus Chesley Award granted for distinguished service in the field of public health. He practices in Duluth.

Michael T. Osterholm, Ph.D., Chief, Acute Disease Epidemiology Section, Minnesota Department of Health received the Department's Achievement Award for his contributions to public health in Minnesota.

Kathryn Green, M.D., director of pediatric neurology at Children's Hospital of St. Paul, has been elected president of Minnesota Women Physicians, a 140 member organization

Scientific Exhibits — MMA Annual Meeting

Physician groups and clinics interested in presenting scientific exhibits at the MMA Annual Meeting in May are invited to contact the Association Office (378-1875) for information and applications.

Cover Photo

"Glacier Wall Fire"

In September, 1974, while traveling through Glacier National Park, Dr. Thomas A. Ala took the cover photograph. The picture was taken from Going to the Sun Road. He is a St. Paul Ramsey Medical Center resident specializing in Neurology.

This area was burned during the 1967 Glacier Wall Fire.

A Nikon FTN camera with 55 mm lens was used with Kodachrome 25 film. The setting was F8 at 1/125th sec.

Dr. Ala has had several of his slides used as covers for MINNESOTA MEDICINE. The May, 1983 issue of the Journal carried one of his vertical slides.

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Whether practicing on their own or as part of a clinic, the physicians have joined because physicians are the policymakers of the Exchange, the Exchange has a sound risk management program, the Exchange has a solid reinsurance program and the Exchange offers attractive rates.

For these reasons, we encourage you to give the Exchange your careful consideration. If you have any questions, desire additional information or would like to join the Exchange, please call 800/462-5326 or 612/623-1132.

Sincerely,



Robert S. Flom, M.D.
Chairman,
Minnesota Medical Management, Inc.

Geriatric Medicine

Attending Physician Bylaws for Nursing Homes

ANN C. VOGEL, M.D.* and TERRANCE P. HENDERSON, M.D.†

As hospital medical care evolved in the United States the concept of medical staff bylaws developed to the point that this is a well accepted standard now in our country. We expect the hospital administrator's response varied from chagrin that they had lost total control over their medical staffs to a wide acceptance that there was a legal physician developed and controlled organization that was the "third force" in hospital function — the other two being hospital administration and the governing board.

Now in the 20th century the nursing home has matured as an expanding, increasingly professional part of the medical care complex. Initially the concept of medical staff bylaws will be greeted by physicians with great suspicion. However on further investigation, similarity to the hospital model will be seen.

Nursing home medical staff bylaw development will be seen as more of a help than a hinderance to the physician and unique differences from hospitals need not be a deterrent. Ultimately better care for the nursing home patient can emanate from better medical staff organization.

The following bylaws represent a consensus of nursing home medical directors in the State of Minnesota. They were offered for review and comment at the American Medical Directors Association Scientific Meeting in Las Vegas, Nevada, in the fall of 1982. The nursing home medical directors in attendance at the meeting in Las Vegas felt it important to circulate this information for medical professionals to use as a reference.

The nine guidelines included were developed for attending physicians presently seeing patients in nursing homes. It is recommended these bylaws be reviewed by the nursing home medical director, administrator and governing board. They should be of help in the future organization of the nursing home medical staff. They will provide a mechanism to ensure quality medical care, and provision for ongoing 24 hour medical care of nursing home residents.

Guidelines for Nursing Home Bylaws for Attending Physicians

1. A Descriptive Outline of the Medical Staff Organization (to include:)

- attending physicians
- medical director and
- consulting or courtesy physicians (where applicable)
- (mention if N.H. has open or closed staff)
- purpose of organization and describe the membership

(Recommend) The medical staff include the expertise of the existing Quality Assurance Committee (i.e. Utilization Review Committee)

2. A Statement of the Qualifications Required of an Attending Physician Who Has *Admitting* and *Attending* Privileges in the Facility

Example of Such a Statement:

"Physicians seeking to admit patients to _____ Nursing Home facility agree to observe the patient care policies in the bylaws and regulations of _____ Nursing Home. Physicians who admit patients must be licensed in the State of _____ and must supply the nursing home with their current license number.

(Recommend) This statement be signed by each attending physician, documenting it has been read. Also, it should be updated and reviewed annually.

*Family practitioner, New Ulm Medical Clinic, New Ulm.

†Family practitioner, White Bear Lake, Minnesota.

3. *A procedure for granting and withdrawing attending physician's practice privileges*
(It is highly recommended) The nursing home have a procedure outlined for determining who is to have admitting and attending privileges and under what circumstances they should be withdrawn. The Quality Assurance Committee or Utilization Review Committee and medical director should assist in this determination. It is important to point out, "*The board of directors or the nursing home proprietor has the ultimate responsibility for medical care,*" as stated in the Federal Registry. Also, the written bylaws, rules and regulations which are developed are to be "approved by the governing body and include the delineation of responsibilities of attending physicians."
4. *Provisions for regular meetings of the medical staff (when applicable)*
 - This depends on the size of the nursing home
 - Meetings of the Quality Assurance Committee (or Utilization Review Committee) may suffice
5. *Provisions for keeping accurate and complete medical records*
It is worth emphasizing that if record-keeping is done properly within the nursing home, it will also reflect the attending physician's compliance with (nursing home) care policies.
6. *Provisions for securing emergency medical care if the attending physician is not available*
(Recommend) Upon admission, the resident's primary care physician designate an alternate physician to be called when the primary care physician is not available. If *not* previously stated, the medical director is given the authority to treat the patient until the attending physician becomes available.
The "alternate call" system used by the nursing home should not cause undue delay in the resident obtaining emergency services.
7. Provisions requiring physician's written orders be recorded and signed, verbal and telephone orders be recorded immediately and signed by the accepting physician, nurse or pharmacist (in the case of medication orders only) and countersigned by the attending physician.
8. A statement of the necessary qualifications, status, staff appointments and rights of dentists, podiatrists, and members of other allied health professions.
(Recommend) The services of allied health professionals be initiated upon specific written orders by attending physicians.
9. Provision for the establishment of effective controls (through the medical staff or medical staff equivalent) to insure physicians adhere to professional medical and ethical standards.
This provision should include the documented peer review of the medical care being given by attending physicians. The function of the Quality Assurance Committee (or Utilization Review Committee) should be noted in the bylaws annually. Members comprising the committee, plus a description of how the committee functions, when it meets, and what decisions it has been empowered to make should also be documented.

Minnesota Medical Association Annual Meeting
May 9-May 12, 1984
Radisson South-Bloomington.

PHYSICIANS IN TRANSITION

1984 Minnesota Medical Association Annual Meeting

May 9, 10, 11, 12

Radisson South Hotel
Bloomington, Minnesota

☆131st Annual Meeting☆

The 131st Annual Meeting of the Minnesota Medical Association will be held May 9, 10, 11 and 12 at the Radisson South Hotel in Bloomington. The revamped, stimulating meeting will include: an all day socio-economic conference to provide you with the latest information in the ever changing health care environment; the first Annual MMA Hospital Medical Staff Section; a comprehensive scientific program of continuing medical education for physicians in many different specialties; the Annual Meeting of your professional liability insurance company the Minnesota Medical Insurance Exchange; the inauguration of the incoming MMA President; the policy-making sessions of the MMA House of Delegates; MMA Auxiliary activities; MINNPAC activities; stimulating scientific and technical exhibits along with a new Competitor's Fair featuring all the health care plans. For the next three months we will be providing you with information and previews of all these activities and more planned for this year's meeting.

PLUS

EXHIBITORS WINE AND CHEESE MAY 10
ART SHOW MAY 10-11
MMIE ANNUAL MEETING MAY 11
PRACTICE MANAGEMENT MAY 11
FINANCIAL PLANNING MAY 11

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**"CHILD ABUSE AND
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18 programs providing physicians the opportunity to obtain 6 Category I credits on May 10 and 8.5 Category I credits on May 11.

Other highlights include: Computers; fad or fact (PMS); Battered Child—Radiological imaging; Child Behaviour and Pediatrics.

Prospective Pricing

DRGs

If physicians are to respond to the advent of prospective pricing and other new payment systems such as PPOs which place the provider at risk, physicians will need to create new organizations to allow the equitable sharing of the risks and the rewards. To hear the whys and hows, register for the day long Socio-Economic Program on Thursday, May 10.

HOSPITAL MEDICAL STAFF SECTION

On Wednesday, May 9, MMA's 1st Annual Hospital Medical Staff Section will convene. Hospital Chiefs of Staff are designating representatives from each hospital. Reference committees will be formed to review issues and recommend positions to the Section. See your Chief of Staff if you are interested.

WHO?

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RESIDENT PHYSICIANS
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COST?	1 Day *	2 Days *
MMA Member	\$60.00	\$ 95.00
Non Member	95.00	130.00
Resident	FREE	FREE
Medical Student	FREE	FREE

Other Categories see future literature or call Eugenia Kassir at the MMA Office.

* Refers to scientific and socio-economic program days. Note: May 9 and 12 are non-program days with no fee except for meals.

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MMA ANNUAL MEETING
"THE PHYSICIAN AS ARTIST"
May 10-11, 1984, Radisson South Hotel
Information Sheet

FEE: \$10 per item
(\$5 for residents
and medical students)

ELIGIBLE All Physicians
EXHIBITORS:

EXHIBIT HOURS: 8:00 a.m.-5:00 p.m., Thursday, May 10
8:00 a.m.-5:00 p.m., Friday, May 11

APPLICATION April 23, 1984
DEADLINE:

DELIVERY must be made in person between the hours of 8:00 a.m. and 3:00 p.m. on Wednesday, May 9, 1984, to Veranda 1 at the Radisson South Hotel (second floor).

PLEASE DO NOT SHIP DIRECTLY TO THE RADISSON SOUTH HOTEL OR TO THE MINNESOTA MEDICAL ASSOCIATION OFFICE. Neither the Hotel nor the MMA office has space for storage prior to the exhibit. Only items that can be personally delivered and picked up will be accepted.

SET-UP AND DISPLAY will be handled by the Art Show Chairman with the assistance of MMA staff. Framed pieces and heavy pieces to be suspended should be equipped with wire. Mounting tape will be used to mount lightweight photographs, drawings, etc. on the walls and displaypanels. Shelves, tables and pedestals will be used for three-dimensional objects.

EXHIBITS MUST BE PICKED UP between the hours of 5:00 p.m. and 6:00 p.m. on Friday, May 11. The MMA cannot ship exhibits back to their owners.

JUDGING, PRIZES: An expert judge will make awards on Thursday, May 10. Ribbons will be placed on the winning items.

ACCEPTABLE ENTRIES: All forms of art are encouraged. Entrants should choose artistic creations as opposed to craft products.

SECURITY: Guard service for the exhibit room will be hired between 8:00 a.m. and 5:00 p.m. on Thursday, May 10 and Friday, May 11. When the room is not occupied by a guard, it will be locked.

LIABILITY: The Minnesota Medical Association, the Radisson South Hotel, Radisson Hotel Corporation, and Brede, Inc., are not responsible for injury to persons or damage to or loss of property. It is understood that neither the Hotel nor the legal entities which own, lease and/or operate the Hotel; the Minnesota Medical Association; nor Brede, Inc.; nor their members, officers, directors or employees shall be responsible or liable for injury to any person or persons or for loss of or damage to any property belonging to the exhibitor or any person or persons. The exhibitor assumes complete responsibility and liability for all loss, damage or destruction of the property of the exhibitor, his guests and all property of the Hotel used by the exhibitor or brought upon the Hotel premises in his behalf.

The exhibitor indemnifies and agrees to hold harmless the Minnesota Medical Association; the Radisson South; Brede, Inc.; and the legal entities which own, lease, and/or operate the Radisson South Hotel; and their members, officers, directors and employees against any and all liability whatsoever arising from any or all damage to property or personal injury or loss caused by the exhibitor or his agents, representatives, employees, or any other person.

Deadline for submission: April 23, 1984
Fee: \$10 per item (\$5 for residents & medical students)

ADDRESS _____
(STREET) _____
(CITY, STATE, ZIP) _____

Only one entry may be made per person per category. (Multiple paintings, drawings or sculpture may be submitted if they are in different media.) Please request additional forms if necessary and complete one form for each entry.

BRIEF DESCRIPTION (subject, materials used):

(A photograph should be submitted with the application form.)

Please attach the entry fee (payable to Minnesota Medical Association) and photograph
and return to:

A list of all entries will be mailed to entrants in the first week of May.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location: Contact person.

April, 1984

7 Minnesota Society of Anesthesiologists Spring Scientific Meeting; MN Society of Anesthesiologists; Hilton Inn, Minneapolis; CONTACT: Douglas E. Koehntop, M.D., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8826

12 Advanced Cardiac Life Support Certification; St. Francis Regional Med. Center, Education Dept.; CONTACT: Judy Hoff, 325 W. Fifth Ave., Shakopee, MN 55379; 612/445-2322

12-13 Medical/Legal Issues in the 80's: Institutional Medical Staff Liability and Effective Medical Expert Testimony; St. Paul Ramsey Medical-Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

13-14 Eating Disorders Update: Anorexia Nervosa & Bulimia; University of Minnesota; Earle Brown Center, U of M; CONTACT: U of M CME, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

13-14 Colon and Rectal Diseases; U of M Medical School; Hyatt Regency Hotel; CONTACT: CME, University of Minnesota, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN; 612/373-8012.

13 Pediatric Challenges — 12th Annual Symposium for Primary Care Physicians; Minneapolis Children's Health Center; Minneapolis Children's Health Center; CONTACT: James Moore, M.D., Indian Health Board 2495 18th Avenue South, Minneapolis, MN 55404; 612/721-7425.

14 Minnesota Society of Clinical Pathologists Spring Meeting; ASCP; Marriott Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director of Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., #400, Minneapolis, MN 55414; 612/378-1875.

4 Problems in Cardiovascular; The Duluth Clinic, Ltd.; St. Mary's Hospital Auditorium; CONTACT: James Brueggemann, M.D., The Duluth Clinic, 400 E. Third Street, Duluth, MN 55805; 218/722-8364.

13-27 Family Practice Review: Update 1984; University of Minnesota Medical School; Holiday Inn Downtown, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293, Mayo Memorial, 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

26-27 Pediatric Days; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085

27-28 Ophthalmic Reviews; Mayo Clinic Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

27-28 Advanced Trauma Life Support Course; American College of Surgeons; Rochester, MN; CONTACT: Peter Mucha, Jr., M.D., 200 First St., SW, Rochester, MN 55901; 507/285-6960

April 30-May 4 Practice of Internal Medicine — 1984; Mayo Clinic/Mayo Foundation; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, S.W., Rochester, MN 55905; 507/284-2085.

May, 1984

4 MN Surgical Society Meeting; MN Surgical Society; Rochester, MN; CONTACT: Clive Grant, M.D., Mayo Clinic, Rochester, MN 55902; 507/284-2644

4-5 Nuclear Cardiology; Mayo Clinic; Lake Region Hosp., Fergus Falls, MN; CONTACT: J. R. Hendel, M.D., 712 So. Cascade, Fergus Falls, MN 56537; 218/736-5475

4-18 MKSAP VI Review Course; American College of Physicians; Minneapolis; CONTACT: 800/523-1546

9-12 Minnesota Medical Association, Annual Meeting; MMA; Radisson South Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director, Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

10-12 42nd Annual Course in Allergy and Clinical Immunology; CME Office U of M Medical School; Mayo Memorial Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office, Box 193 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

10 Management of Low Back Pain; Abbott Northwestern Hospital, Minneapolis; CONTACT: Education Dept., Abbott Northwestern Hospital, Mpls., MN 55407 612/874-4300

10 Medical Chest; St. Joseph's Medical Center; Brainerd, MN; CONTACT: Mark Muesing, M.D., 303 Kingwood, Brainerd, MN; 218/829-3568

11 ENT Primary Care: A Workshop; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Dr. Charles Drage, 69 West Exchange Street, St. Paul, MN 55102; 612 291-3180.

14-15 Basic Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612 932-5189

14-18 MKSAP Review Course; American College of Physicians; Hennepin County Medical Center, Mpls., MN; CONTACT: Dr. Leslie Zieve, Hennepin County Medical Center, Mpls., MN 55415; 612 347-2703

17-18 Radiology Update; St. Paul Ramsey Medical Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

17-19 Topics and Advances in Pediatrics; Office of CME U of M Medical School; Mayo Memorial, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

20-22 Impact of Modern Perinatal Care on Society — 14th Annual Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bards, Box 50, 420 Delaware St. S.E., Mpls., MN 55455; 612 373-5718

21-23 Bone and Soft Tissue Tumors; American Academy of Orthopaedic Surgeons; Mayo Clinic, Rochester; CONTACT: 507/284-2085.

22 Gynecologic Oncology Update, Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612 373-8012

23-25 Current Concepts in Radiation Therapy; Office of CME, U of M Medical School; Mayo Memorial Auditorium; U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

May 30 — June 1 Recent Advances in Laboratory Medicine; Office of CME, U of M Medical School; Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

June 1984

7-8 Clinical Nutrition for Practicing Physicians; St. Paul Ramsey Medical Center; The St. Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612 221-3992.

12, 19 & 20 Basic Life Support (CPR) Instructor Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612 932-5189

13-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

14-15 Dual Disorders: Chemical Dependency & Psychiatric Disorder; Alcohol-Drug Treatment Program, Dept. of Psychiatry, Univ. of MN; L'Hotel Sofitel, Mpls.; CONTACT: Joseph Westermeyer, M.D., Dept. of Psychiatry, U of MN Hosp., Mpls., MN 55455; 612/373-7952

14-16 Management of Pelvic Trauma; American Academy of Orthopaedic Surgeons; AMFAC Hotel, Minneapolis; CONTACT: 312/822-0970.

20-21 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

25-29 Advanced Cardiac Life Support Course; Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

26-27 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

27-29 Real Time Ultrasound in Obstetrics; U of M Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

22-27 Medical Treatment Update for the Family Physician; North Memorial Medical Center; Plummer's Great Slave Lake Lodge — Canada; CONTACT: Joseph Bocklage, M.D., 608 Oakdale Medical Bldg., Robbinsdale, MN 55422; 612/588-9478.

July 27 — August 13 Summer Sportsmedicine Conference; North Central Medical Conference; Los Angeles, California; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

20-22 The Knee: Current Concepts of Treatment & Techniques; American Academy of Orthopaedic Surgeons, The Kahler Hotel, Rochester, MN; CONTACT: 312/822-0970

20-22 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge \$10.00, key number, \$2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

FAMILY PHYSICIAN wanted, board certified or eligible, to join two young family physicians in a growing family practice group. New facility. Northfield is a small attractive college town (St. Olaf and Carleton) and is less than one hour from the Twin Cities and Rochester. Contact: Kenneth Sansome, M.D., or David Larson, M.D., Family Physicians of Northfield, 505 W. Woodley, Northfield, MN 55057; (507) 663-1261.

GENERAL SURGEON AND INTERNIST — BC/BE needed immediately to join 10-member Southern Minnesota multi-specialty group. Fairmont is progressive city of 13,000 with excellent schools and recreation around chain of 5 lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact: Donald Grandgenett, Fairmont Medical Clinic, Fairmont, Minnesota 56031, (507) 238-4263.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

LAND FOR SALE: 40, 80, 140 acre parcels in Carlton County. Road access, high land, wooded, \$200 to \$300 per acre. Write Charlie Gronquist, M.D., 1210 Wilson Avenue, Cloquet, MN 55720, or call at 218-879-4813.

EMERGENCY PHYSICIANS or primary specialists with ER experience: Full time practice opportunities available beginning January, 1984, in Minneapolis/St. Paul at our newest free-standing emergency centers. Admissions and referrals through a major Minneapolis teaching hospital. Excellent salary with opportunity to advance and join a physician partnership which develops, staffs and manages free-standing emergency centers and hospital E.D.'s nationally. Send CV to: Madeleine Shalowitz, M.D., The Flashner Medical Partnership, The Doctors Emergency Officenters, 830 E. Rand Road, Mt. Prospect, IL. 60056.

NEEDED IMMEDIATELY, physicians for General Practice, Internal Medicine specialists and pediatrican for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D. or Noel Collis M.D. at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

FAMILY PRACTITIONER — Join an active practice in Northern Minnesota. Two young F.P.'s are looking for one or two associates to replace retiring partner. Attractive clinic and 44 bed hospital in a friendly town of 2000. Contact W. Ofstedal, M.D., 218-435-1212, Fosston, Minnesota 56542.

(Continued on page 234)

Classified Advertisements

(Continued from page 233)

FAMILY PHYSICIAN, INTERNIST, SOUTHWESTERN MINNESOTA Rural Primary Care Group — 12 physicians (8 Family Physicians, Internist, 2 General Surgeons, Pediatrician) in an Agricultural-Commercial-University town of 11,000 invites residency trained/board certified Family Physician and Internist to join progressive patient-oriented practice in a recently built hospital and ambulatory care center. **USUAL CHAMBER OF COMMERCE CLAIMS NEARLY TRUE HERE!** C. P. Martin, M.D., Doctors' Plaza, Marshall, MN 56258; Phone: (507) 532-9631.

ST. PETER REGIONAL TREATMENT CENTER, St. Peter, MN, has salaried positions for psychiatrists in several areas of clinical practice. We are a 600 bed psychiatric facility serving a multitude of disability groups including mentally ill, chemically dependent, mentally retarded, and mentally ill and dangerous. JCAH Accredited. These are new positions that are becoming available because we are expanding our medical staff. Join a group of academically oriented board certified psychiatrists with the University of Minnesota affiliations. Release time for teaching and research activities is available. St. Peter is a college town of 9,000 in the Minnesota River Valley with abundant outdoor recreation and good schools. We are located 64 miles south of the Twin Cities and 12 miles north of a university town of 40,000+. Salary up to \$75,000 per year with board certification and relevant clinical/academic/administrative experience. Contact Brian Gottlieb, M.D., Chief of Staff, at Minnesota Security Hospital, Sheppard Drive, St. Peter, MN 56082 or call collect at 507-931-7127.

IMMEDIATE OPENING: Family Practitioner or Internist to join an active practice in Western Minnesota. Salary competitive. Call in confidence to Metropolitan Medical Placement, (612) 831-5232.

BUSY FAMILY PRACTICE needs Associate, with early partnership considered. Well equipped 15 room Clinic on main street. Cannon Falls offers a 25 bed hospital (district approved bond issue for one million dollar expansion to start in April), 88 bed nursing home. One other clinic in town. We have a large drawing area. Cannon Falls offers excellent recreational facilities, and location is on Cannon River between the Twin Cities and Rochester on Highway 52. Contact Lloyd H. Klefstad, M.D., Box 98, Cannon Falls, Minn. 55009. Telephone 507-263-3545, or 263-4258.

FAMILY PRACTITIONER to join two physician practice in Mille Lacs Lake area of central Minnesota. Ideal communities, excellent schools, numerous community activities. Newly renovated 30 bed hospital and nursing home. Established program for outreach and referrals. Send C.V. or contact Charles J. Fazio, M.D., Medical Director, P.O. Box 53, Isle, Minnesota 56342. Call (612) 676-3661 (office) or (612) 532-4460 (home).

BOARD ELIGIBLE general practitioner seeks general or pediatrics group practice in suburban or rural setting. Medical education; University of Chile, 1974. Internship: Georgetown University. Residency: Howard University. Licenses: Washington, D.C., Maryland, Florida. General practitioner experience, Miami, 1974-78. Desires people-oriented practice. Contact Ramon Gonzales, M.D., 6207 Capella Avenue, Burke, Virginia 22015, (703) 569-8679 (home), (202) 563-8849 (work).

INTERNAL MEDICINE THIRD YEAR resident available for lucum tenans July, 1984. Medical education: University of Minnesota, 1981. Residency: University of Texas, Medical branch. License: Minnesota, March, 1984. Will accept short term or full year appointment. Prefers Twin Cities. Contact Peter Rusterholz, M.D., 109 Albacore, Galveston, Texas 77550, (409) 761-2441 (work), (409) 763-6611 (home).

INTERNIST ASSOCIATE — Moorhead Medical Center. Fargo-Moorhead has three colleges and excellent schools. Competitive salary. Send C.V. to John Gjevre, M.D., Box 914, Moorhead, MN 56560.

EXPANDING MINNEAPOLIS, seven-county metro group seeks family practice associate. Recently opened satellite clinic. Competitive compensation and fringe. Ideal urban-rural lifestyle mix. Superior hospital. Contact: Gloria M. Vierling, Business Manager at: (612) 445-6440 or P.O. Box 9, Shakopee, Minnesota 55379.

OPPORTUNITY FOR PSYCHIATRISTS AND GENERAL PHYSICIANS to serve a needy group of patients with problems of mental illness, mental retardation, senility and chemical dependency at Moose Lake State Hospital. An existing team of skilled and caring personnel welcomes your inquiry. Contact Donald P. Fox, M.D., Acting Medical Director, Moose Lake State Hospital, Moose Lake, MN 55767, (218) 485-4411.

Classified Advertisements

FAMILY PRACTICE PHYSICIAN needed by Cook Area Health Services, Inc., Cook, Minnesota. Salary is competitive and negotiable with full-fringe benefit package. Located in the quiet woods and waters of beautiful Lake Vermilion. Call collect: (218) 666-5959 Ext. 38. Write: Cook Area Health Services, Inc. Ashawa Clinic Building, Cook, Minnesota 55723.

GENERAL SURGEON with vascular training to join two-physician department in multispecialty clinic. Contact Robert M. Vogel, Administrator, Bloomington-Lake Clinic, 3017 Bloomington Avenue South, Minneapolis, Minnesota 55407.

FAMILY PRACTICE PHYSICIAN/PEDIATRICIAN — board eligible/certified physician to join supportive staff (5 FP's, 1 OB, 1 Peds, 1 PA, 2 Nurse Practitioners) to provide quality care in an established, successful HMO clinic. Located in central MN community of 50,000 (3 colleges, full recreational activities, 1 hour from Twin Cities). Full range group fringe benefits (competitive salary, liberal vacation, 2 wks education time with expenses, retirement fund, etc.). Full range FP responsibilities including OB. Contact Dr. Patrick M. Lalley, CMGHP, 1411 Germain St., St. Cloud, MN 56301. Phone: 612-253-5220.

WANTED: Psychiatrist, full or part-time, and GP. Competitive salary with excellent fringe benefits. Contact: Robert W. Schulz, M.D., Medical Director, Moose Lake State Hospital, Moose Lake, MN 55767.

FAMILY PRACTICE PHYSICIANS A large progressive and growing multi-specialty and family practice group has openings for full-time family practice physicians in a satellite and urgi-center location. We are located in a community of 100,000 in the upper Midwest close to a Minnesota resort lake area. Please send curriculum vitae to Personnel Director, Dakota Clinic, Ltd., P.O. Box 6001, Fargo, North Dakota 58108.

FAMILY PRACTITIONERS — Excellent opportunity to work with well established Family Practitioner/General Surgeon, in the beautiful lakes country of Southwest Minnesota. Delightful community of 12,000 with excellent schools and a new 64-bed hospital. Comfortable, friendly lifestyle with good professional support. Marshall Medical Clinic 1104 E. College Drive Marshall, MN 56258.

SOUTHERN CALIFORNIA — We are seeking experienced specialists and general practitioners for our facilities in Los Angeles and Orange Counties. Located in close proximity to major teaching centers, we offer the opportunity of continued professional development and rewarding clinical practice in association with 350 full-time physicians. Compensation and benefits are excellent including paid vacation, educational leave, sick leave, and retirement; insurances included are malpractice, life, disability, medical and dental. Send CV to: Professional Placement, INA and Ross Loos Healthplans, 700 N. Brand Blvd., Suite 500, Glendale, CA 91203.

GROUP HEALTH, INC., the midwest's largest and oldest prepaid multispecialty group, seeks associates in ALLERGY, CARDIOLOGY, FAMILY PRACTICE (no ob/gyn), GERIATRICS, and OBSTETRICS/GYNECOLOGY. Must be board certified or eligible. Excellent facilities, comprehensive benefits, highly competitive earnings. Send curriculum vitae to: Paul J. Brat, M.D.; Medical Director, GROUP HEALTH, INC., 2829 University Avenue Southeast, Minneapolis, Minnesota 55414.

CARDIOLOGIST Grand Forks Clinic, Ltd., seeks experienced Cardiologist to head expanding program. Competitive salary and fringe benefits leading to early full participation. Send C.V. to Arnold Wax, M.D., or call 1-800-437-5373.

ST. LOUIS, MO: HMO seeks Family Practice or Internal Medicine board eligible/certified physicians for its 3 facilities. New, well-equipped locations service 25,000 subscribers. Competitive salary plus incentive bonus. Excellent benefits, some of which are: health, life, disability insurance; 3 weeks paid vacation; paid CME leave; pension plan; etc. Positions are available now and summer of 1984. American-trained physicians preferred. Respond in confidence to: Mike Dixon, 999 Executive Parkway, P.O. Box 27352, St. Louis, MO 63141; 1-800-325-2982.

FAMILY PHYSICIAN Grand Forks Clinic, Ltd., seeks Family Physician for well-established branch in Warren, Minnesota. Competitive salary and fringe benefits leading to early full participation. Send C.V. to Arnold Wax, M.D., or call 1-800-437-5373.

(Continued on page 236)

Classified Advertisements

(Continued from page 235)

INTERNIST-CARDIOLOGIST AND NEUROLOGIST — specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

WANTED: Ob-Gyn, family practitioner, pediatrician and internal medicine to join multi-specialty group. One month vacation, hunting, fishing and lake recreation area. Starting salary excellent, many fringe benefits included. Write: MINNESOTA MEDICINE (735), 2221 University Ave. SE, Suite 400, Minneapolis 55414.

GENERAL INTERNIST — BC/BE needed immediately to join a ten member multi-specialty group in Southern Minnesota. Fairmont is a progressive city of 13,000 with excellent schools and recreational areas around a chain of five lakes. Near-new 114 bed hospital adjacent to clinic. First year salary guaranteed with full partnership after one year. Contact Donald Grangenett, Fairmont Medical Clinic, P.A., Fairmont, Minnesota 56031. (507) 238-4263.

GENERAL SURGEON including orthopedic and gynecological surgical procedures. Falls Medical Center, P.A. on beautiful Rainy Lake, has 8 physicians plus consultants in pathology, orthopedics, cardiology, ophthalmology, ENT, OB-GYN, oral surgery; full-time radiologist, 62-bed hospital. First year salary guaranteed. Contact: Drs. Crow, Gorden or Schuft, Falls Medical Center, P.A., Shorewood Drive, International Falls, MN 56649, (218) 283-9431.

FAMILY PRACTICE — A solo practice with coverage available in Moorhead. Also partnership available in northwestern Minnesota and group practice available in southern Minnesota. Attractive salary or guarantee with benefit package. Hospital located in each community. Practice broad scope of family medicine including obstetrics. For complete practice, hospital and community information, contact Tom Campbell, Fox Hill Associates, 414/785-6500 (collect).

ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

FOR SALE: Family practice, office and equipment. Small southern Minnesota town. Reasonable, terms negotiable. Hospital, cooperative colleagues, excellent community. Call 612-388-7584 evenings.

FAMILY PRACTICE PHYSICIANS are being sought for immediate opening in Madison, Minnesota. Practice offers multiple opportunities with experienced medical staff. Financial arrangements negotiable, starting with a guaranteed salary and advancing to partnership if desired. Details may be secured by calling either of the two following individuals collect: Norval M. Westby, M.D. (612) 598-7531 or Richard L. Range, Administrator (612) 598-7556.

PHYSICIAN DESIRES TWO (2) other Doctors to share large office, downtown Minneapolis. Approx. monthly rent, utilities, phone, etc. would be \$700-800. Call: 612-870-8448.

1984 CME CRUISE/CONFERENCES ON LEGAL-MEDICAL ISSUES — Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. 7-14 days in Winter, Spring, Summer. Approved for 18-24 CME Cat. 1 credits (AMA/PRA). Distinguished professors. FLY ROUNDTRIP FREE ON CARIBBEAN, MEXICAN, & ALASKAN CRUISES. Excellent group fares on finest ships. Registration limited. Prescheduled in compliance with present IRS requirements. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

Classified Advertisements

THE BEMIDJI CLINIC is a 20 doctor multi-specialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary & fringe benefits offered. Currently recruiting for Board Certified Family Physician and Internist, Generalist or subspecialist, preferably with subspecialty training. Contact D. E. Carlson at (218) 751-1280, Bemidji, MN (218) 243-3139 (Home)

LOCUM TENENS — general practitioner, and internal medicine specialists for growing Southern Minnesota medical group. Call Tom Koehnen, M.D. or Noel Collis, M.D. at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

FOSSTON PRACTICE has family practice position in agriculture-based town located on North Dakota border. First year salary for BC/BE candidate with admitting privileges to 44-bed hospital. Population: 1800. Service area: 10,000. Fosston offers good school system, airport, civic center, recreational facilities and is served by 2 physicians. Contact Paul Havens, M.D., 127 N.E. Second Street, Fosston, Minnesota 56542, (218) 435-1212.

SOLO FAMILY PRACTICE for sale in Zumbrota, located between Rochester and Minneapolis. Negotiable price and terms, includes office and equipment. Prefers BE buyer. Friendly community and excellent schools, government and churches. Golf course available locally. Oliver E. H. Larson, M.D., 118 East 4th Street, Zumbrota, Minnesota 55992. Call evenings: (612) 388-7584.

ST. CLOUD INTERNAL MEDICINE solo practitioner seeks locum tenens applicant. Starting date and salary negotiable. Prefers third year resident or BE/BC internal medicine practitioner. Fee-for-service and HMO practice. Possible long-term opportunity negotiable based on successful experience. 350-bed hospital in community of 100 physicians. Contact Jerome Ballantine, M.D., 408 Medical Arts Building, St. Cloud, Minnesota 56301, (612) 252-3632.

OFFICE SPACE FOR LEASE Beautiful Medical Space (Available July, 1984); Uptown Minneapolis — Prime Space near Calhoun Square; Street Level; Medical & Dental Building; Handicapped Bathrooms; 3-5 Treatment Rooms; Office; Teaching Area/Lounge; Reception Area; Partially Furnished; 2½ year lease; Call 721-7093 for more information.

FAMILY PRACTICE PHYSICIAN(S) wanted, board certified or eligible, to join four physicians in growing family practice group. Position(s) are available on full time or part-time basis. Practice is located in area that offers advantages of a smaller community, while only minutes away from the Twin Cities. If interested, call Michael Stein, Administrator, at (612) 448-2050, 200 Doctor's Park, Chaska, Minnesota 55318.

IMMEDIATE OPENING for primary care physician. Internal Medicine. Midway area of Saint Paul. Contact David Klevan, M.D. at 612-645-0711. 451 North Dunlap, Saint Paul, MN 55104.

EMERGENCY MEDICINE: Duluth, Locum Tenens, Work 2-3 months starting 6/15 or 7/1/84. 30-40 hrs./wk. at \$30-38/hr. Contact Jim Green, M.D., 2223 Lake Avenue, So., Duluth, Minnesota 55802 218-727-7652

FOR RENT: Doctors Office located in Downtown Hastings, Minn. Over 2000 Sq. Feet. Present Physician retiring after 20 years. Available April 1st. Call: 612-437-3955.

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Interspecialty Council Highlights

Current Activities of the Interspecialty Council

FEBRUARY 1984

A New Corporation — P.I.C.

The Minnesota Medical Association, Hennepin County Medical Society and Ramsey County Medical Society have formed a new corporation to market computer hardware and software products to Minnesota physicians.

A new corporation, Professional Information Corporation (PIC), has been established to sell Diversified Information Systems Corporation (DISC) turnkey Medical Management System.

Members of the Board of Directors of PIC include James F. Knapp, M.D., Detroit Lakes, Frank M. Gaertner, Jr., M.D., St. Paul, Roger W. Becklund, M.D., Minneapolis, Thomas W. Hoban, Executive Vice President of the Hennepin County Medical Society, and Douglas A. Shaw, Chief Executive Officer of the Minnesota Medical Association.

The decision to offer computer products is in response to a growing number of requests by members for help with computerization. PIC will sell the DISC system to assist physicians in automating their offices in an increasingly competitive environment.

DISC health care system is an integrated, comprehensive package which initially can be applied to patient billing, insurance processing, collection management and financial reporting. Additional DISC software packages for medical practice management are available to improve office efficiency, productivity and patient services. They are compatible with a wide range of computer hardware.

PIC now offers the DISC system in the Twin Cities area and is expected to offer the product throughout the state by late 1984.

DPW Fraud Squad

The DPW Medical Assistance Fraud Squad was established by the Criminal Division of the Attorney General's office as a result of a \$400,000 grant by the Federal government with a \$40,000 matching contribution from the State of Minnesota.

The purpose of the Fraud Squad is to seek out abuse and fraud within the provider community. The Federal government believes a great deal of money is being lost in the Medical Assistance area due to the fraud of providers. Consequently, they have asked the states to be aggressive in their actions and have provided the funds to seek out fraudulent providers.

One of the problems that exists with the program is the way cases for review are handled. Instead of investigating first and prosecuting later, the review committee will hand all cases over to the Attorney General's office before a review is done. This removes all possibility of reconciliation between DPW and the provider.

A brochure, developed by the MMA staff, will be added to the Monitor as an insert, describing the program and explaining what to do if the Fraud Squad knocks on your door.

Medicaid Prepaid Demonstration Project

The Medicaid Prepaid Demonstration Project is in the final stages of planning. Hennepin and Itasca counties have tentatively been selected for the project which will begin July 1, 1984.

The purpose of this project is three fold; (1) To control public expenditures for health care by shifting from an open-ended, provider/consumer-induced demand system to a budgeted prepaid reimbursement system. (2) To further the evolution of a competitive health care system by shifting a publicly funded fee-for-service program (Medicaid) to a prepaid arrangement. (3) To create and test various policies, procedures and systems transferrable to other sites as the first step in the implementation of a national prepaid Medicaid program.

There are thirteen umbrella organizations interested in providing services to the areas affected, including: the "Blues" through their Aware program, Share, Group Health, Med Center, the Academy Primary Care Network, Abbott Northwestern Lifespan, PHP, and several smaller groups.

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Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

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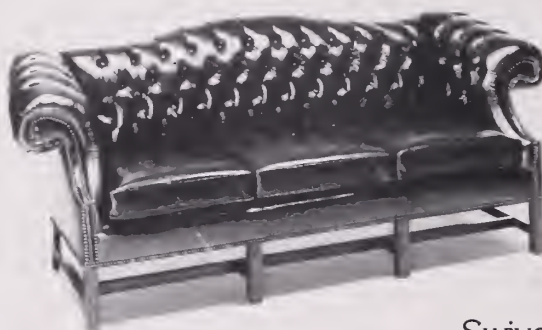
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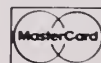
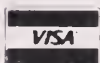
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President's Letter



Das Geist Des Malthus

"Since he came down from the trees, man has faced the problem of survival, not as an individual, but as a member of a social group.

"--the continued existence of want and misery, even in the richest of nations, is evidence that his solution has been at best a partial one.

"Yet man is not to be too severely censured for his failure to achieve a paradise on earth. It is hard to wring a livelihood from the surface of this planet. It staggers the imagination to think of the endless effort which must have been expended--

"Man is not an ant, conveniently equipped with an inborn pattern of social instincts. On the contrary, he is pre-eminently endowed with a fiercely self-centered nature."

Robert L. Heilbronner
"The Worldly Philosophers"

The man had returned from his winter home in Florida to his home in Richfield, Minnesota, because he did not feel at all well. He presented himself to his physician, well dressed in an obviously costly new suit of clothes. His puffy face, hoarse voice and slowed speech bespoke of his myxedema. The diagnosis was not new. He related to his physician that he had become so angry at his insurance company (which for whatever reasons, had refused to pay for his thyroid pills) that he had quit the medication about a year ago, refusing to buy them for himself.

I cannot conceive of a more vivid example of the paradox presented by the problem presented to our society as a whole, and to individuals in particular, by health care expenditures. The central fact is that people just do not like to spend money on the treatment of their disease states nor for their own health maintenance measures. While this dislike many times is based on real economic problems, people's fundamental aversion to health care expenditures is independent of the economics involved as is illustrated in the above case, which was recently related to me by a friend.

The problem, I feel, is based on the extreme difficulty humanity has had in reconciling the fundamental self-centeredness referred to by Heilbronner in the above quote which each one of us has (irrational), and the rational need for wealth to be reasonably distributed and spent for the most important things *first*. How can a society which is made up of individuals similar in one degree or other to the man used as an illustration who would not distribute to *himself* the cost of medication which would equal that of an average priced meal every few months in order to maintain his own health, be expected to make rational social decisions about the distribution of societal wealth toward medical expenditures?

This parallels public attitude toward other essential expenditures, such as food. For much of mankind's existence, all available resources have been directed to food, shelter, and military defense against enemies. It wasn't until the Industrial Revolution created *surplus* wealth and the fact that this developed in England where there was enough political freedom to allow a gradual diffusion of this surplus wealth to masses of people, that *problems of choice* as to where an individual or a society is to spend this wealth arose. The resulting societal form is called "democratic capitalism."

It is helpful, I believe, to review the thinking of the earliest of economists who lived and thought during the formative years of democratic capitalism. It should be recalled that this creation of wealth was an entirely new human experience and social phenomenon.

The positive viewpoint regarding this new wealth was presented by Adam Smith who wrote about the "Wealth of Nations." The title largely describes the direction of his thought. The new democratic capitalism would create wealth enough for all, and the processes of competition would guarantee equitable distribution. (Sound familiar?)

Thomas Malthus and David Ricardo, both writing some 40 years after Adam Smith, had a somewhat "down stream" perspective from that of Smith. They were the best of personal friends, but over several decades they explored and debated differing manifestations of economic theory as it fitted the world they observed and lived in. Both, being realists, were pessimists as opposed to Smith's optimism.

Malthus basically addressed the question of "how much wealth is there?"¹ as compared to the population. He envisioned the population expansion as endlessly exceeding the wealth (especially in food supply) available. Thus, dooming much of mankind to poverty and starvation.

Ricardo addressed the question of "who gets what?"¹ He thus was the earliest of our economic philosophers to address the distributional ethic problems which ramify directly to our health care cost problems of today.

J.B. Say, a French economist, contemporary with Malthus and Ricardo, was the first to identify that human beings have an insatiable appetite for commodities. Mankind's appetite for clothes, furniture, luxuries, and ornaments seemed to Say to be endless.¹ Say would have understood my friend's patient. Better a new suit of clothes and two homes than thyroid pills.

While each of these men wrote of factors which are still pertinent today, the process of democratic capitalism has evolved beyond the isolated elements each of them identified. It has created wealth in amounts that exceeded their most extravagant expectations.

In his book "Toward a Theology of the Corporation", Michael Novak outlines that democratic capitalism has three basic systems — economic, political, and moral-cultural. The latter is composed of such elements as the legal system, educational system, health care system, and religious institutions, etc.

The central genius of democratic capitalism is that each of these three systems is accountable to the other but not subservient. One can see the heavy price a society pays when one of these systems becomes dominant (that is it no longer is under democratic capitalism): Pre-World War II Germany, in which the economic system (Krupp, et al.) dominated; Soviet Russia, in which the political system dominates; present day Iran, in which the religious institution (moral-cultural) dominates.

The fundamental problem our health care system now has is that the public perception has been created that it has not been accountable to the economic system. As a direct result the health care system has now been made subservient to both the economic and political systems. I use the term "created" because of my belief that whether we have or have not behaved accountably is arguable. The argument centers around whether or not we have given full value for the money spent and not only on the amount of money being spent.

This point, unfortunately, is moot, because the perception is now in place. In this type of situation the perception creates the reality. A society which in the past would send

PRESIDENT'S LETTER

young women to be burned at the stake on the perception that they were witches or would destroy countless brilliant careers on the perception that the people involved were communists now stands ready to destroy history's best health care system on the perception that it has not behaved in an economically accountable manner.

By "economically subservient" I mean that the fundamental role of a physician — that of being the patient's advocate in matters of his/her need for medical services is now subservient to the corporate need to create capital in the process of doing business. There are many ramifications of this conflict of ethics, but the central one is that the physician is now a double agent and regardless of his/her best intentions must insert corporate or governmental economies into the previously unified process of applying whatever means are necessary to patient benefit.

A person who has seen this conflict of interest earlier and more clearly than most of us is Robert W. Geist, M.D., St. Paul urologist. Bob, for many years has patiently but persistently entreated us to take a stand as a unified profession at the main point at which a basic conflict of interest occurs in the new health care delivery systems. This point is when a physician orders services from someone other than her/himself. Bob contends that when a physician profits from such referrals, in whatever setting this occurs, it is unprofessional and should therefore be made illegal. He points out that all delivery systems could be made free of this conflict of interest and still differ in their fundamental physician payment mechanisms. He is urging us to seek legislative correction of this problem.

I do not pretend to know what ramifications this would have on our various health care delivery organizations. I hope to listen carefully and help in the process of thinking this matter through during the upcoming annual meeting.

There may be the hazard of putting some organizations out of business were such changes to be made, leaving a patient's medical care unfunded. This needs thorough evaluation.

I doubt that many people sent Parson Malthus letters of gratitude for his paper which made the future look so dismal. I would like to help correct any lack of gratitude we as a profession may have shown Bob Geist. So thank you, Bob, you have been doing a lot of thinking for all of us. Speaking for myself I'm not entirely sure how my own vote will go, but you have done all of us a fine service with your insight and your persistence.

It is well for us as we contemplate our current situation to recall that the medical technological revolution is no less profound a change in society than was the industrial revolution of the 1700s. The latter created wealth which society never had to deal with before. The former has given us an ability to create good health and extend life — something, again, that society has never had to deal with before. We need Smiths, Malthuses, Ricardos, and Geists to shed light on our obscure roads ahead.

* * * *

Time brings an end to all things, and my course as President of MMA has been run. It has been, next to being a participant in a beautiful marriage and helping to create four human beings, and next to having been able to become a physician, my top experience. I wish to close my column with this language from Dag Hammersjold, the early Secretary General of the U.N., who was a man of great faith.

Except in faith — no one is humble.

*The mask of weakness is **not** humility.*

and

except in faith — no one is proud.

*The vanity of the spiritually immature in all of its varieties is **not** pride.*

To be — in faith — both humble and proud

That is to live

To know that in God — I am nothing.

But, that God is in me!!²

PRESIDENT'S LETTER

You are all people of faith — both truly humble and truly proud. I thank all of you for the opportunity you have given me this past year and for the help that so many of you have been to me.

I commend to you Tom Briggs — a man that I know God is in!!



Donald C. Bell, M.D.
President
Minnesota Medical Association

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1. Heilbronner, Robert L: The Worldly Philosophers. Paperback. Simon and Schuster, New York, New York.
2. Hammersjold, Dag: Markings. Albert A. Knopf Publishing Co., Random House, New York, New York.

University of California

October 16-18, 1984. Primary Care: Selected Infectious Diseases. Kauai, Hawaii. Credit hours: A.M.A. 11½ Category 1. Fee: \$225 to August 15, then \$275. Sponsors: Health Science Seminars and Extended Programs in Medical Education, University of California, San Francisco. Contact: Cynthia Vaughan, P.O. Box 22023, San Francisco, CA 94122; or call (415) 861-2713.

Physicians in the News

Richard P. Carroll, M.D., Minneapolis, is the elected President of the American Society of Ophthalmic, Plastic and Reconstructive Surgery. He will serve in this capacity until January, 1985.

Maurice R. McNeil, M.D. family physician from Glencoe, has been named Minnesota's Family Physician of the Year by the Minnesota Academy of Family Physicians. This award is given to the physician most "concerned and caring" for the health of his patients.

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Editor's Notebook

Corporate Transformation of Medicine in Minnesota: No Miracles among Friends: Competitive Changes in Wake of HMO Growth* First of two Parts

Fifth in a Series

"Minnesotan's use of hospitals fell off sharply in January and February, according to a survey by the Minnesota Hospital Association.

Industry sources said a decline was expected, but not as sharp as that which occurred. It comes in the midst of widespread belt-tightening in the industry, including layoffs and service cuts.

Patient-days, one of the industry's key barometers of business activity, dropped 16 percent in January and 13 percent in February, compared to the same months in 1983, the Association found. In the seven-county metropolitan area, the declines were 13 and 10 percent.

The average length of hospital stay in the state, another key indicator, also fell, from 6.8 days in January 1983 to 5.7 days in January 1984, and from 6.8 days to 5.8 days in February, the survey found."

Walter Parker, "Hospital Patient — Days Drop Sharply,"
St. Paul Pioneer Press, April 13, 1984

"A suburban hospital, looking for a way to protect and expand its share of the health market, is considering establishing a doctor house call program for the Twin Cities metropolitan area.

Jerry Blume, chief executive officer of Mercy Medical Center in Coon Rapids, said a marketing survey indicates demand for the service, a return, of sorts, to the days when patients could summon doctors by telephone.

Blume said Mercy has to find ways to compete for patients and revenue in a market where hospital use is declining and the federal government, Blue Cross-Blue Shield and health maintenance organizations (HMOs) are limiting or reducing hospital income.

Mercy's possible move into house calls is just one of the flood of activities by hospitals, doctors and clinics to protect or expand their shares of the market.

Many doctors are providing evening and weekend service, working from more than one office, looking at affiliation arrangements with other doctors, clinics and hospitals, and some are using modern marketing techniques."

Gordon Slovut, "Doctors Don't Make House Calls Any More? Hospital Has an Idea," Minneapolis Star and Tribune, April 13, 1984

*Based on presentation before Blue Cross and Blue Shield's National Alternative Deliver Systems Conference, Royal Sonesta Hotel, New Orleans, Louisiana, April 8, 1984.

EDITOR'S NOTEBOOK

NEW ORLEANS — First of all, thank you — managers, marketers, and movers of HMOs and PPOs for Blue Cross and Blue Shield — for inviting me to deliver this keynote address. Because I hail from the fee-for-service and voluntary hospital sectors, the two parents who gave birth to the Blues, your invitation surprises and flatters me.

Literary License

If you don't mind, I shall exercise my literary license by introducing my remarks with a slight paraphrase of a Rudyard Kipling quote (I have substituted the word "where" for the word "why"). The quote contains the pith of what I have to say.

I keep six honest serving men
(They taught me all I knew):
Their names are What and Where and When
And How and When and Who.

Who I Am

I shall start with who I am. That way you can judge what I have to say. Let me state at once that I have spent my whole professional life in traditional medicine — as a hospital pathologist, as a partner in a private laboratory, as the Editor of a state medical journal, and as a proud dues-paying member of organized medicine. I go to a private physician and do not belong to an HMO.

So much for my personal experiences and biases. In the late sixties, after observing corporations take over laboratories and install management systems, a thought dawned, and I said to my wife, "I believe medicine is going to be industrialized before it will be nationalized." Acting on that belief, I set aside six weeks in the summer of 1976 and took an advanced health systems management course at the Harvard Schools of Business and Public Health.

Ever since I've been thinking, writing, and speaking about 3M — the Metamorphosis of Medicine in Minnesota. These activities culminated in November 1983 in a special MINNESOTA MEDICINE issue, "The Coming of Corporations," and in an 11 page introductory editorial to that issue, "The Corporate Transformation of Medicine in Minnesota: the Accelerating Industrialization of Health Care in the Twin Cities."

That editorial was the first of a series. I have written three others — one on the expected impact of Urgicenters on the Twin Cities, the second on the practices of Health Care Advertising and Marketing in our Cities, and the third on the burgeoning Medical-Industrial Complex of Minnesota, or MEDICOM.

My basic theses in these editorials are these: (1) management — through its skills, access to capital, and abilities to bring a complex service product to market — is winning the battle to control health care from physicians, who, in turn, are losing their capacity to act as independent professionals; and (2) as a consequence, and based on fierce price and product competition, an unprecedented realignment, restructuring, and shakeout is taking place between the Twin Cities' health care institutions and among members of the health care establishment.

How I View The World

How do I view the world of health care competition? Besides being a struggle between management and physicians for dominance, this world is shaping up as a battleground between rival organizations. Physicians are aligning themselves with hospitals, professional groups, IPAs, PPOs, and HMOs, which are themselves forming local, regional, state, and national systems. These rival organizations and systems employ skilled managers to compete and appeal on the basis of price, care packages, accessibility, and public satisfaction in an increasingly segmented market. More and more, fee-for-service physicians, for reasons of marketing and survival or plain entrepreneurism, are drawn into these rival organizations — as investors, founders, executives, partners, managers, con-

sultants, contractors, or employees.

Meanwhile, four major power centers tower in the background. They call the shots, dominate the action, challenge and respond to each other's moves, and stay more or less in dynamic equilibrium.

These are:

1. Organized Medicine. This includes the medical school and research community, fee-for-service physicians, doctors who control or work for organizations, and Yumps (young upwardly mobile physicians, mostly aged 25 to 40), many of whom do not belong to the AMA, many of whom work as emergency room and hospital staff physicians, many of whom may work for outpatient organizations, and many of whom do not bother to apply for hospital staff privileges. (As I see it, physicians from all walks of work will join competing rival organizations, and fewer will belong to the county, state, and national medical societies. But the declining membership rolls of these societies will have a greater share of members who work for the rival systems. Membership in the AMA has dropped from 79 to 45 percent in the last ten years; curiously, AMA membership in Minnesota is still above 70 percent, partly because Minnesota, with five times the rate of members in group practice as the rest of the United States, has as many groups which offer AMA membership as a fringe benefit.)

2. Large Insurance Organizations — These include Blue Cross and Blue Shield and other commercial carriers. Because you and your colleagues have operating revenues of at least \$10 billion, have clients in every state and every locality, collectively operate over 100 HMOs, provide large payrolls in most regions of the country, you will remain as powerful bulwarks against change and organizational powerhouses that can shape change. (This will be particularly so in the multistate HMO movement. As Blue Cross and Blue Shield, you experienced a 23 percent increase in enrollment in your 58 HMOs last year, commanded roughly 12 percent of existing HMO enrollments, and will soon launch your *HMO-USA* campaign with 38 of your HMOs in 21 states.)

3. The Nation's 7000 or so Voluntary Hospitals. These are now under considerable stress because of DRG legislation, the emergence of for-profit hospital chains, the growth of HMOS, and the changing competitive environment, which includes physicians siphoning off profitable hospital business. Still, the boards of these hospitals feature the elite of the community in terms of money, influence, and power, and with the boards' help, hospital corporation executives are diversifying to meet competitive challenges. Anyway, it is no secret leaders of these hospitals interact closely with Blue Cross and Blue Shield executives. Together you will respond to survive. (There is a tendency to label voluntary hospitals as a stagnant, mature, or declining industry. Paul Ellwood has called them the "Big Cars" of the health care industry. But it is my view — based on experience with resourceful Twin Cities hospital executives — that these people are an adaptable and hardy breed who know how to accommodate and how to survive.)

4. The Medical-Industrial Complex — This complex includes a diverse array of profit-making enterprises, including everything from pharmaceutical houses, to dialysis centers, to medical high-technology companies, to commercial laboratories, to nursing homes, to home care organizations, to for-profit hospital chains, and to for-profit HMOs. (In the race for power, this complex is coming up strong on the outside, and its speed of growth exceeds other power centers. Of the various segments of the complex, for-profit multistate HMOs have attracted the most investor interest. *In 1983 alone*, seven firms went public and brought in \$280 million of private money — more than the U.S. government invested in seven years before it stopped subsidizing HMOs two and a half years ago.)

HMOs — fueled by this investor money, the Reagan Administration's procompetitive stance, the surplus of doctors and hospital beds, and society's consensus that health care costs *have to be slowed* — are threatening to upset the equilibrium between the power centers by aggressive marketing to audiences who are now receptive to their messages.

Somehow, through the emergence of a fragmented health care market and economic factors of uncontrolled costs and fierce competition and the sheer pain of paying huge medical bills, the traditional pillars of American medicine — fee-for-service, choice of physician, and cost-reimbursement — seem suddenly fragile and subject to erosion.

Where I Come From

I am not here to wave the flag of surrender for traditional medicine in its war with managed competitive systems. Why should I? After all, HMOs nationally have penetrated only five percent of the U.S. market. But I do see HMOs advancing on many fronts. And I do come from a metropolitan area where HMOs have achieved 32 percent market penetration. Finally, I no longer believe the Twin Cities are an isolated place for HMO growth, a kind of geographic anachronism. Where I came from, I have seen how HMOs can alter the basic shape of health care competition. I am not waving the flag. I am not sounding the alarm. I do not intend for this to be a self-fulfilling prophecy, but a frank view of the world as I see it.

We all associate different cities with private fantasies. When I imagine New Orleans, these random thoughts spring to mind — a Long tradition of politics, Creole and Cajun cuisine and chicory coffee, underground lifestyles with above ground gravestones, steamy and sultry Mardi Gras frolickings, sexual alternative delivery systems, the overwhelming capacity of the Super Dome, the underwhelming anticipation of the 1984 World Fair, the only U.S. city conservative enough to resist an operational HMO, and a French Quarter where The Saints Go Marching In. Doctors in this town may still be whistling Dixie about HMOs, but your time will come.

I thought of calling this talk, "Singing the Blues to the Blues in the City That Gave Birth to the Blues." There were a couple of minor problems with that title — the Blues are not Blue but upbeat about the growth of their 58 HMOs; Dallas, not New Orleans, gave Birth to the Blues in 1929; and New Orleans gave Birth to Jazz, not the Blues.

You, in your turn, may have saintly fantasies about Minneapolis and St. Paul as special places where the air is clear, the politics clean, the debates pure, and the HMO competition bracing. We have our own fantasies:

- That a Minnesotan can be elected President;
- That the rest of the United States shares our enthusiasm for our enlightened liberalism;
- That the quality of life is directly proportional to the level of taxes; and
- That — after two Vice-Presidents, four Superbowls, and one Stanley Cup final — we can finish first in national competition. (We are not even first in HMO market penetration; California has that honor.)

But we still like to talk about our accomplishments. (Hubert Humphrey, Minnesotans fondly recall, could talk 100 miles an hour, with gusts up to 200.) Say what we will, many others are impressed with the nobility of our thinking. This elevated impression even wafts down to national business experts. Here is William Ouchi, a UCLA business school professor, talking of Minneapolis business practices in his recent book: *THE M — FORM SOCIETY: HOW AMERICAN TEAMWORK CAN CAPTURE THE COMPETITIVE EDGE*:

"Minneapolis, Inc.: what might that mean? . . . Business in Minneapolis appears to violate the central ideology of U.S. commerce, that the business of business is business. It is a city with a strong tradition, the home of many socialist movements. It is not a place of do-gooders or altruists, but of realistic, self-interested individuals who cooperate within an institutional framework . . . There is a stable pattern of repeated exchanges over many years that makes social choice and collective action possible . . ."

As a physician member of the Minneapolis business establishment (Minneapolis Rotary and the Minneapolis Club), I will affirm this institutional network exists. The unified

backing of the business community has been a strong force propelling the HMO movement. If present business coalitions across the country have anywhere near the clout of Twin Cities' businessmen, HMOs will soon become a competitive force in the national competitive health care environment.

Before you are taken in by this intoxicating blend of socialism, idealism, realism, and business harmony, listen to this story:

"One day, St. Peter and St. Paul both arrived at an inn in Jerusalem on the same night, weary and footsore. They called for wine and refreshed themselves, and then fell into an argument common to travelers as to who should pay the reckoning. Peter suggested throwing the dice. Paul fetched them, shook the box, and threw two sevens. Paul gave them a long look, and said sadly, "Peter, old man, not miracles among friends, please."

As a veteran observer of the Competitive Health Movement in the Twin Cities, I'm here to report we have achieved no miracles. If you are a citizen of New Orleans, you've been a Mississippi recipient of Minnesota effluent for too long to believe in Minnesota Miracles.

What Has Happened in the Twin Cities

Instead of talking about the Twin Cities' miracle in transforming our Health Care Delivery System, I shall say we are nearing the end of a painful and sometimes turbulent transition from a predominantly fee-for-service system to a predominantly prepaid HMO system. This transition started in 1957, when Group Health was founded and then thrived by enrolling members of educational associations and employees of the University of Minnesota, picked up momentum when these HMOs came into being — MedCenter 1972, Coordinated Health Care 1972, Nicollet-Eitel 1973, SHARE 1974, HMO-Minnesota (the Blue Cross-Blue Shield entry) 1975, and Physicians Health Plan 1975 (the doctors' IPA); took another jump with the Medicare prepaid the Demonstration Project in 1981; this year notched up again when the DRG legislation forced hospitals to become price sensitive and competitively minded; and is now, in my opinion and those of informed onlookers, making the final push towards 50 percent market penetration and beyond. For those of you who are mesmerized by HMO market penetration figures, here they are for your eyes.

1971	2.3%	1978	12.4%
1972	2.9%	1979	15.8%
1973	3.6%	1980	21.0%
1974	4.3%	1981	24.7%
1975	5.5%	1982	26.9%
1976	7.3%	1983	32.0%
1977	9.7%		

Before you leap to the conclusion that this exponential growth has miraculously driven down health care costs and transformed hospital business practices beyond recognition, consider these 1981 hospital data figures comparing Twin Cities hospitals to U.S. metropolitan areas as a whole

Hospital Data	Twin Cities	All U.S. Metropolitan Areas
Number of hospitals	39	—
Number of beds	10,529	—
Beds/1000 population	4.9	4.6
Hospital employees/1000 population	15.4	14.7
Admissions/1000 population	1317	1316
Occupancy Rate	73.1%	78.4%
Length of stay	8.1	7.8
Surgeries/1000 population	89.9	95.4
Expenses/inpatient day	\$373	\$352
Expenses/capita	\$491	\$464

EDITOR'S NOTEBOOK

These are not the figures of which the Miracles of Health Care Reform are made. Still, there are divining signs that the long awaited reform may be at hand. In 1982, surges in Twin Cities' hospital costs slowed to 5.3 percent versus 14.4 percent for other United States hospitals. And in 1984, inpatient days in the first three months plummeted by 8.9 percent in Minneapolis and 20.3 percent in St. Paul. Six hospitals closed, consolidated, or merged, and three or four others are on the edge of extinction. There are many signs hospitals are scrambling — agreeing to become preferred hospitals for Blue Cross-Blue Shield, giving discounts to most HMO, PPO, or organized groups who ask for them, laying off employees in phased reductions, and diversifying so fast the changes bewilder the most seasoned of hospital watchers.

What is going on? Let me throw this curve at you. In a 1982 *Business Week* article, Paul Ellwood — godfather, gadfly, guru, and goader of the HMO movement — was quoted as saying: "We've learned it takes a lot of effort to persuade employers — and employees — of the advantages of HMOs. We've also found there's a slow learning curve at first, but then things really begin to take off."

The national HMO movement may be at the take-off point. The HMOs have learned the basics — how to do business, how to market, and how to keep patients happy — and they are ready to apply those lessons to their own worlds and to other worlds outside their territories. If you look at the learning curves for the Harvard Community Health Plan of Boston, the Twin Cities HMO, the Kaiser Health Plan, other California HMOs, and even the United States HMOs as a whole, you'll see the flat part of the growth curve occurs in the first five to seven years. After that, hold onto your seat, or your wallets, if you're in private practice or in voluntary hospitals, for then the curve bends sharply skyward.

What Happens When . . .

What happens when HMO learning curves take off — and those of consumers, government officials, senior citizens, businessmen, and providers — take off, i.e., exponentially climb the heights of the curve? What happens when physicians in their offices face mounting piles of HMO-transfer forms? What happens when hospital administrators struggle to survive, as they try to keep from drowning in the alphabet soup of HMOs, PPOs, and DRGs? What happens to academic centers as HMOs mop up market share, as government sponsors prepaid projects for Medicare and Medicaid recipients, as referrals dry up from private physicians, and as Blue Cross and Blue Shield, other commercial insurers, and HMOs clamp down on costs and discourage admissions to teaching hospitals? What happens to Blue Cross and Blue Shield when the indemnity insurance market shrivels?

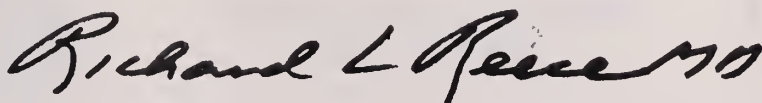
What happens when urban HMOs go rural, when local HMOs become regional, when regional HMOs become part of national chains, and when non-profit HMOs join forces to form national corporations for joint marketing and investment purposes? What happens when existing multistate HMO firms expand as cited below? What happens as these figures continue to mount?

Multistate HMO Firms, 1983

HMOs	Number of Operating Firms	Enrollment
Charter Med, Inc.	7	180,353
CIGNA Healthplan, Inc.	8	648,892
Family Health Program	3	146,502
Hancock/Dikewood	4	57,853
HealthAmerica Corporation	15	301,309
HIP of Greater New York	2	872,669
Kaiser Health Plans	9	4,838,760
MaxiCare Health Plans, Inc.	5	253,438
The Pace Group	2	28,757
Peak Health Plans	3	35,500
PruCare	9	265,802
Share Development Corporation	2	74,500
Blue Cross and Blue Shield Plan	58	1,352,505
U.S. Health Care Systems	2	164,400
Totals	129	8,711,239

EDITOR'S NOTEBOOK

The second, and concluding part, of this Blue Cross-Blue Shield address will appear in the next issue.



United Scleroderma Foundation Twin Cities Area Chapter

Scleroderma is a crippling and incurable disease. Its name is derived from the Greek words "sclero" (hard) and "derma" (skin). It is commonly known as the disease that turns people to stone.

Scleroderma is classified as a connective tissue disorder and thought to result from narrowing of the blood vessels. The disease is divided into two major forms: localized and systemic.

Localized scleroderma involves the skin and subcutaneous tissues and causes cosmetic and mobility problems. The systemic form is often fatal and affects the esophagus, heart, lungs, intestines, kidneys and skin. Scleroderma is related to rheumatoid arthritis and lupus.

The chapter is willing to provide information about their activities to physicians. They would also appreciate it, if you would suggest to your scleroderma patients that they contact the chapter to learn about their free services; including monthly educational presentations, etc.

You may contact Julie A. Schmidt, Twin Cities Area Chapter of the United Scleroderma Foundation, 1645 W. Minnehaha Ave., St. Paul, MN 55104. Or telephone her at: (612) 644-0508.

Critical Care Medicine

North Central Critical Care Society has been organized for those involved in critical care medicine. Our goal is to promote educational opportunities for all members. The first meeting will be held May 19, 1984 at the Hyatt Regency Hotel. Registration 8:45 a.m.

If you or any of your colleagues are interested in membership in this organization, please contact: Richard M. Sweet, M.D., Secretary-Treasurer, 2545 Chicago Avenue So., Suite 610, Minneapolis, Minnesota, 55404, for further details.

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Malabsorption and Protracted Diarrhea Associated with Giardiasis An Unusual Case

THEODORE J. LOFTNESS, B.A.*; JOHN BAILLIE, M.R.C.P. (U.K.)†,
and RONALD D. SOLTIS, M.D.†

The intestinal parasite, *Giardia lamblia*, is gaining widespread attention as a common cause of diarrhea. Infection with *Giardia* can produce a variety of clinical manifestations, and diagnosis often requires a high index of suspicion. This report describes a 38-year-old woman who was referred for a six week history of persistent, watery diarrhea, weight loss and abdominal bloating. Preliminary bacteriologic, proctoscopic and radiologic work-up failed to identify the cause. Further assessment revealed biochemical evidence of malabsorption despite a normal small bowel biopsy and upper GI series. The diagnosis of giardiasis was made from a touch preparation of the second biopsy. The clinical manifestations of giardiasis are discussed, along with current methods used to make the diagnosis.

GIARDIA LAMBLIA is the most commonly isolated intestinal parasite in the United States¹ and is a frequent cause of intestinal disease worldwide. Diarrhea is the most frequent presenting symptom of giardiasis, but a broad spectrum of clinical manifestations exists ranging from an asymptomatic cyst passing stage to severe protracted diarrhea with malabsorption². Most cases of symptomatic giardiasis are diagnosed by finding cysts or trophozoites in a single stool specimen. If stool specimens are negative and giardiasis is strongly suspected, duodenal fluid aspirates and mucosal biopsy specimens may be required to confirm the diagnosis.³ This report describes a case of giardiasis with atypical clinical and laboratory features and illustrates the difficulties in making the diagnosis when stool specimens are negative.

Case Report

A 38-year-old white female from Virginia, Minnesota presented at the University of Minnesota gastroenterology clinic with a six-week history of persistent watery diarrhea (up to 10 stools/day) with rectal urgency and occasional fecal incontinence. She had anorexia and 8 pounds weight loss. She denied melena and rectal bleeding, but complained of abdominal bloating and borborygmi. Investigation in Virginia was unremarkable: proctoscopy showed only

hemorrhoids, a barium enema was normal and routine stool cultures and examination for ova and parasites were negative. An empirical course of tetracycline given for one week produced no remission in symptoms. Repeat stool cultures prior to her gastroenterology clinic visit were negative.

The patient did not abuse alcohol, analgesics, or laxatives and there was no history of foreign travel. Her family had not suffered diarrhea recently. Physical examination was not remarkable. Specifically, there was no fever, lymphadenopathy, clubbing or jaundice present. Abdominal examination revealed only mild tenderness on deep palpation in the right upper quadrant.

Laboratory testing showed: normal CBC, electrolytes, BUN and creatinine, liver enzymes and serum proteins. Serum carotene was very low at 10 µg/100ml (lower limit of normal:80). Serum folate was normal, but vitamin B₁₂ was low at 183 pg/ml (lower limit of normal :250). Stool electrolytes and osmolality did not suggest a secretory-type diarrhea. Stool cultures for *Shigella*, *Salmonella* and *Campylobacter* and ova and parasite examination were negative on seven specimens. Upper GI barium study with small bowel follow-through was normal. Small bowel biopsy two days later was reported to show normal histology and no parasites were seen.

The patient was admitted to the hospital for observation and her diarrhea resolved rapidly on a lactose-free diet. Five days after discharge the diarrhea recurred exactly as before despite compliance with the lactose-free diet. There were no new symptoms such

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as fever, chills or sweats. Repeat testing confirmed the low carotene and vitamin B₁₂, and a D-xylose absorption test was grossly abnormal with a five-hour urinary excretion of 1.5 grams (normal:5.0 grams and over). A Part I Schilling test was mildly abnormal; the abnormality did not correct with intrinsic factor (Part II). Colonoscopy showed mild mucosal inflammation in the transverse and left colon but no ulceration or bleeding. The rectum was normal. Biopsies of the transverse and descending colon showed non-specific inflammatory changes. Carey capsule biopsy of small bowel was repeated; touch preparations stained for *Giardia* were initially interpreted as negative and pending histology the patient was discharged on an empiric course of metronidazole (Flagyl) 250mg t.i.d. for ten days. The histology of the repeat small biopsy was normal. After the patient was discharged, a detailed review of the touch preparations revealed the presence of *Giardia lamblia* trophozoites. The patient's diarrhea completely resolved on treatment with metronidazole. She remains well on no treatment.

Discussion

Large scale outbreaks of giardiasis in this country² and recent reports of infections occurring in day care centers⁴ illustrate the importance of this intestinal flagellate as a common cause of diarrhea. The diagnosis of giardiasis should be considered in all patients who present with unexplained diarrhea or malabsorption, even if no travel or exposure history is obtained. Giardiasis is endemic in Minnesota.

In the present case, the history of persistent watery diarrhea, negative stool cultures, normal upper GI study and laboratory indices indicative of malabsorption suggested the possibility of giardiasis. There was no history of significant travel or exposure and no family member had a recent history of intestinal illness. The diagnosis of giardiasis was confirmed by finding *Giardia* trophozoites in a mucosal impression smear taken from a repeat small bowel biopsy. The patient had rapid resolution of her symptoms after treatment with metronidazole.

The clinical spectrum of giardiasis varies from that of an asymptomatic carrier to severe protracted diarrhea, occasionally complicated by malabsorption and weight loss. Acute infections are often manifest by explosive watery diarrhea accompanied by marked flatulence and abdominal distention. Acute symptoms may mimic those of bacterial food poisoning (such as Salmonellosis), acute viral gastroenteritis and bacillary dysentery. The chief differentiating characteristics of giardiasis are the foul smelling soft or loose

stools, flatus in association with marked abdominal distention and the virtual absence of blood or pus in the stool⁵. The acute stage usually lasts a few days to two to three weeks and in many cases there is spontaneous disappearance of the parasites and symptoms.

Occasionally patients will have subacute or chronic symptoms that persist for months or rarely years following initial exposure. These patients often give a history of having intermittent attacks of mushy, foul-smelling stools, flatulence, foul belching, abdominal aching, anorexia and mild weight loss. Children with chronic infections may show poor weight gain and failure to thrive.

Infection with *Giardia* may be associated with malabsorption of sugars, fat and vitamin B₁₂⁶, the pathogenesis of which is poorly understood. Laboratory studies may reveal increased fecal fat, associated with abnormal D-xylose and Schilling tests. Disaccharidase deficiency frequently occurs in acute giardiasis resulting in lactose intolerance⁵. Restoration of normal intestinal absorption occurs in the majority of patients after appropriate treatment, but some patients experience persistent lactose intolerance after eradication of the parasite.

The diagnosis of giardiasis is most commonly made by finding cysts or trophozoites in a fresh stool specimen. To increase diagnostic yield, at least three stool specimens taken at different times should be examined either by direct smear or by formol-ether concentration. Using these methods, greater than 75%⁷ of patients harboring the parasite will have a positive specimen. False negatives may occur as a result of cyclical absence of the parasite in the stool and from the use of drugs including antibiotics, antacids and antidiarrheal agents⁸. Radiologic contrast material may mask the presence of the parasite and stool examination should be considered unreliable if performed sooner than one week following an upper GI series or barium enema. In these circumstances, repeated stool examination is advisable.

In suspect cases where stool specimens are negative, duodenal fluid samples and small bowel biopsies may be required to confirm the diagnosis. Small intestinal biopsies taken at the duodenojejunal junction are considered to be the most sensitive technique for diagnosing giardiasis³. Stained sections often reveal trophozoites adherent to the mucosal surface, but the diagnosis may be missed if trophozoites are sparse. With all biopsies, a mucosal impression smear or touch preparation should be performed to increase the diagnostic yield.

In some patients none of the diagnostic methods performed will confirm the diagnosis. In these

patients empiric treatment should be considered before giardiasis is ruled out as a cause of the patients symptoms.

Infections with *Giardia* may present clinically in a variety of ways ranging from asymptomatic passage of cysts to severe protracted diarrhea with malabsorption. Giardiasis should be actively considered

in the differential diagnosis of any acute or chronic diarrheal illness. A high level of suspicion is helpful. Also, one should be prepared to obtain a duodenal aspirate or small bowel biopsy to confirm the diagnosis. Rapid resolution of symptoms and a grateful patient is the reward for appropriate treatment.

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Seventh Annual Black Hills Seminar

The Seventh Annual Black Hills Seminar on Advances in Clinical Pediatrics — June 20, 21 and 22, 1984, at Sylvan Lake Resort, Custer, South Dakota, sponsored by the Department of Pediatrics and Adolescent Medicine, University of South Dakota School of Medicine. Guest faculty include Drs. Frank Oski, John Scanlon, Dan Levin, Robert Vernier and H. David Wilson. For complete conference information contact:

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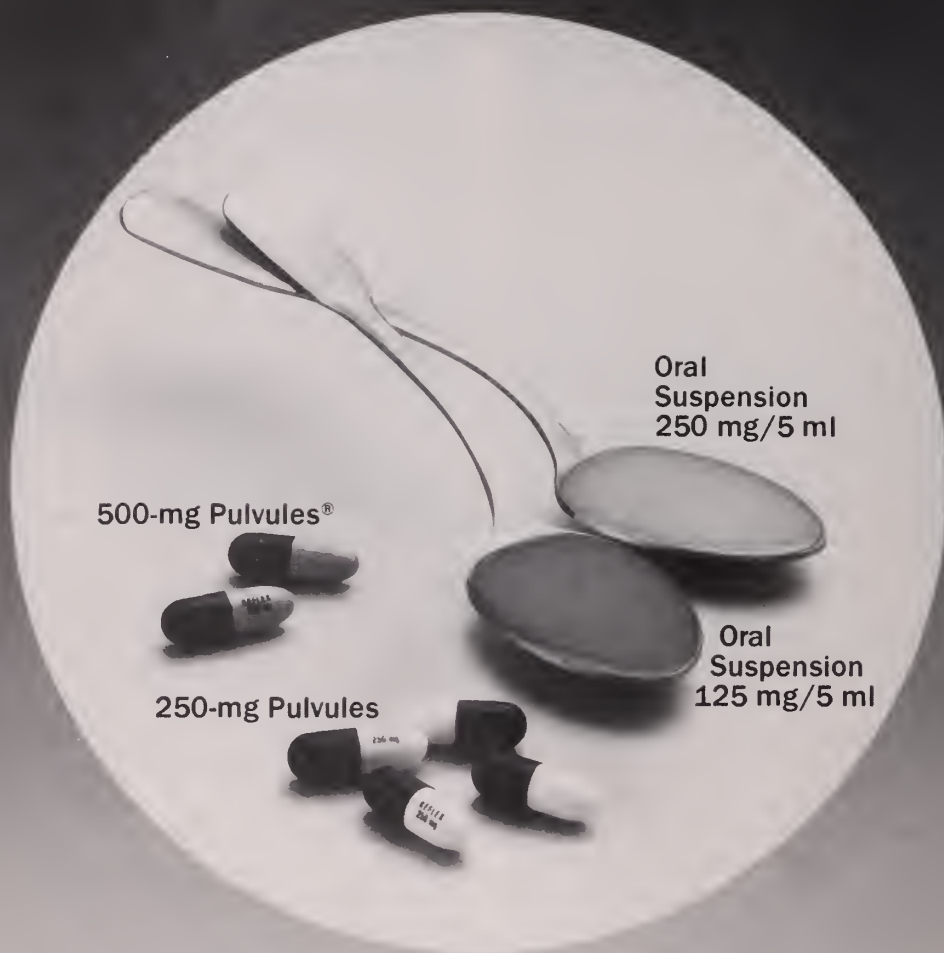
“Wedding Morn”

Dr. Joseph H. Kandiko, family practitioner in Chaska, told the editors he took the cover photo on the beach in Bellingham, Washington. After three blustery, rainy days, the sky cleared and the tide was out the morning of his brother's wedding.

He took the cover photograph of the sunrise over the salmon nets. The camera was a Nikon FM, 50 mm, lens at 1/60, with Kodachrome 64 film.

Dr. Kandiko has been in Chaska since 1979 where he practices in a group with three other physicians. He graduated from Tulane Medical School and did a residency in Family Practice in Dearborn, Michigan.

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Prolonged Survival after Bilateral Thoracotomy for Metastatic Alveolar Soft-Part Sarcoma

THEODORE M. BERMAN, M.D., F.C.C.P.,* SUSAN A. FUHRMAN, M.D.,† and FRANK E. JOHNSON, M.D.‡

Alveolar soft-part sarcoma (ASPS) is a malignant tumor which is usually fatal. A patient with this unusual tumor had bilateral thoracotomy nine years ago, and continues to do well with no recurrent disease.

ALVEOLAR SOFT-PART sarcoma (ASPS) is a rare, slowly growing, malignant tumor which often metastasizes and is usually fatal.¹ We report a patient alive and well, without evidence of recurrent tumor, 19 years after initial diagnosis and nine years after bilateral thoracotomy for metastatic ASPS. She is the longest survivor with metastatic ASPS that we have been able to find in the literature.

Case Report

A 25-year-old woman presented at age six with a mass involving the left lower eyelid. Despite four months of treatment with hot and cold packs, the mass gradually increased in size and she noted diplopia. Local excision was done and the specimen was sent to the Armed Forces Institute of Pathology for pathologic opinion. The tumor was initially thought to be either a non-chromaffin paraganglioma or ASPS. Eight months later, at the age of seven, she had exenteration of the left orbit.

She did well until nine years later when routine follow-up chest Xray (Figure 1) showed bilateral pulmonary nodules. At that time she was asymptomatic. Physical exam was unremarkable with the exception of the enucleation of the left eye. Routine laboratory evaluation including CBC, SM-12 and urinalysis was normal. Whole lung tomography showed five pulmonary nodules in the left lung and two nodules in the right lung. The patient was admitted to Mount Sinai Hospital, Minneapolis, and bilateral thoracotomy was done through posterolateral incisions. Three nodules were removed from the right lower lobe, and ten nodules from the left lung. Seven of these thirteen (7/13) pulmonary nodules showed metastatic ASPS (Figures 2-3). The remaining six

nodules showed either focal congestion, fibrosis or old granuloma. She has been followed with yearly

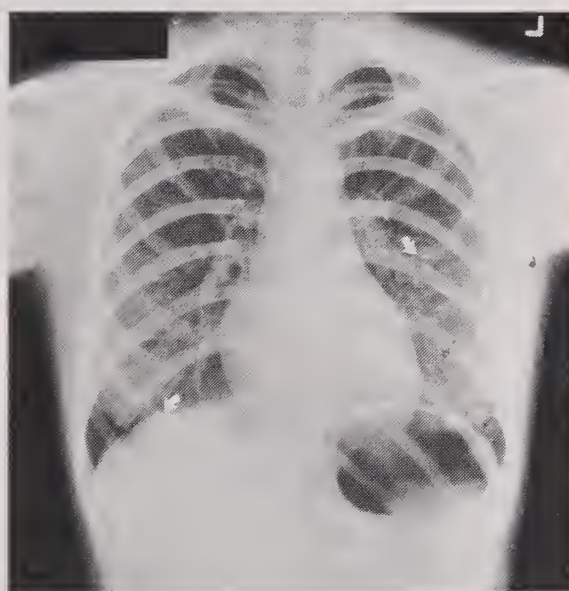


Fig. 1 — Chest Xray showing bilateral pulmonary nodules.

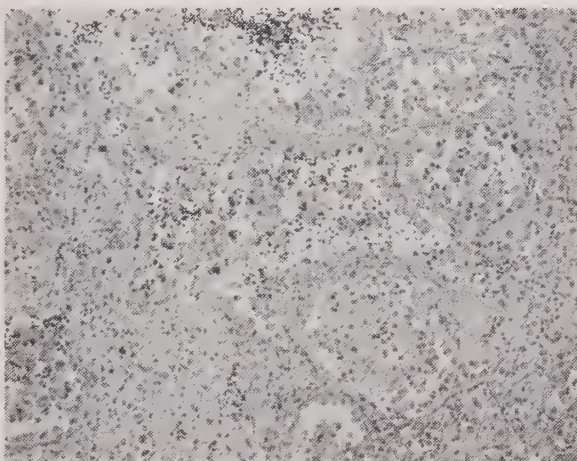


Fig. 2 — Alveolar soft-part sarcoma (ASPS). Low power photomicrograph demonstrating the prominent alveolar pattern with cells clinging to fine fibrous septae. (H & E, magnification x 120)

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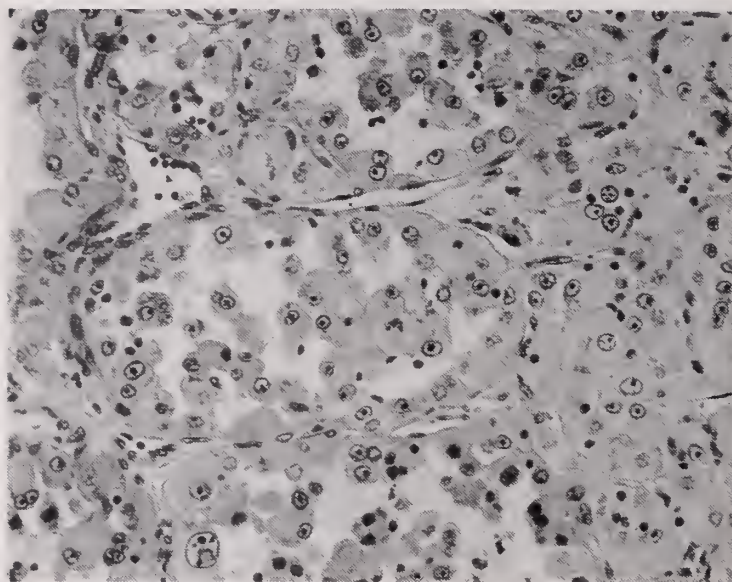


Fig. 3 — ASPS. Higher power photomicrograph demonstrating moderate nuclear pleomorphism with large prominent nucleoli. The cytoplasm contains characteristic granular eosinophilic material which stains positive with PAS. (H & E, magnification x 300)

chest Xrays since surgery. She has not had any radiation therapy or chemotherapy. Her most recent chest Xray, done in 1983, shows no evidence of recurrent tumor.

Discussion

ASPS is a malignant tumor involving soft tissues, most often in the extremities. It was first described in 1952 by Christopherson, et al.² They reported 12 cases of this tumor and coined the descriptive term from its pathological appearance. The origin of this malignant tumor is controversial. Neural tissue, muscle, and paraganglia have all been implicated. A recent study suggests that the origin is a modified smooth muscle cell and that the cytoplasmic crystals seen are an inactive form of renin.³

The largest series of ASPS was published in 1966 by Lieberman et al.¹ They reviewed 53 cases. The tumor was more common in women. The average age of male patients presenting with this tumor was 30; in women, 20. (Age difference statistically significant, $P < .01$.) The five and ten year survival in their series was 59 and 47 per cent, respectively. Twenty-eight (28) cases in their series had metastases. The most frequent sites of metastases were lung (42%), bone (19%), and brain (15%). Twenty-one of the twenty-

three (21/23) patients with lung metastases in this study died. The mean survival after lung metastases was 20 months with a range of 0-56 months. The two patients who were alive with lung metastases had been followed for less than four years.

Baum et al.,⁴ in 1981, reported a patient with metastatic ASPS. This patient had bilateral thoracotomies with a total of 92 malignant nodules removed from the lungs. He was treated with chemotherapy and has survived five years since the appearance of metastases with no evidence of recurrent tumor.

Our patient was included in a study of 17 cases of ASPS involving the orbit reported by Font et al.⁵ in 1982. In this series the prognosis appeared better than in Lieberman's series with only four patients having recurrence or metastases. However, of the 11 patients in this series who are alive and well, six have been followed for six years or less. It is probable that some of these patients will eventually develop metastases.

Because of the indolent nature of this tumor, and two reported deaths in the 20th year after initial presentation, we cannot conclude that she has been cured. However, we recommend aggressive surgical management of isolated pulmonary metastases from this tumor.

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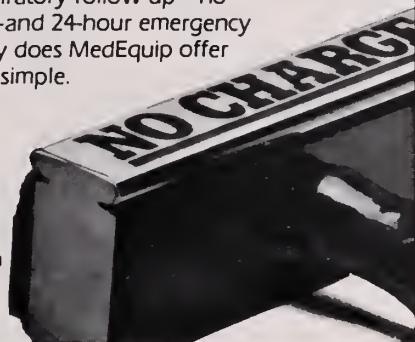
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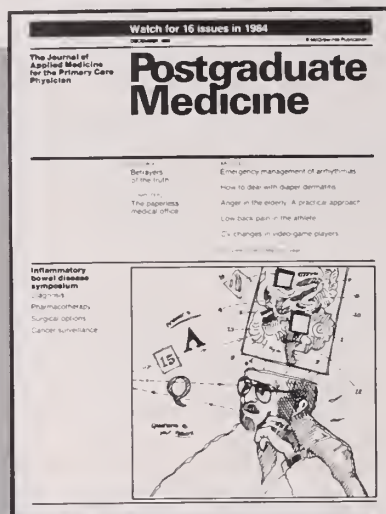
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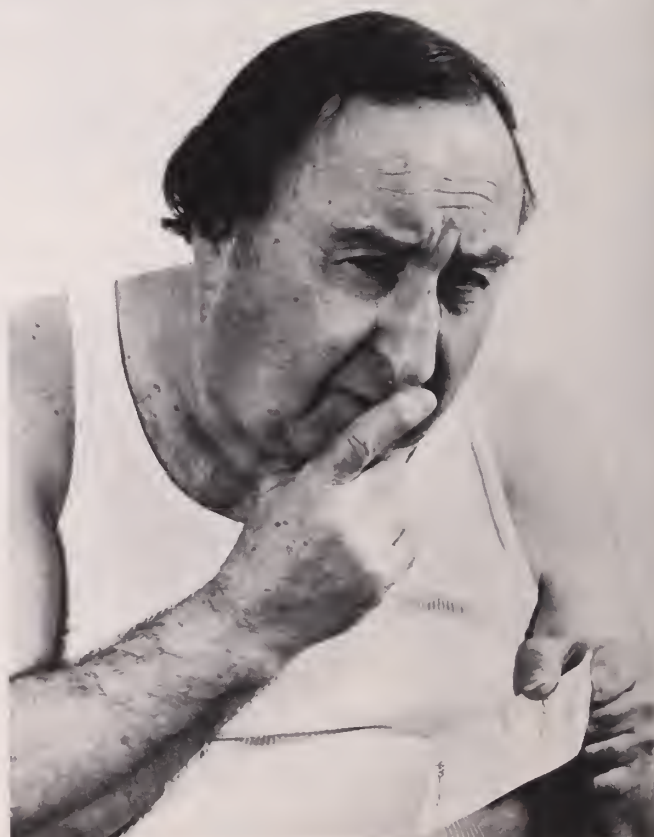
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- What side effects may result—are they serious, short-term, long-term, etc.?

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Silo Emptiers' Diseases

TERENCE R. PLADSON, M.D.*

Farmers may develop three different illnesses from entering their silos. This paper describes three case reports of individuals developing one of the three disease entities. The cases emphasize the differences and similarities of the three diseases: silo filler's disease, farmer's lung disease and pulmonary mycotoxicosis. The history is the most important tool to assist diagnosis. Because of the difference in prognosis and treatment of these disorders, it is important to differentiate these diseases.

FARMERS ARE AT risk of developing numerous occupational diseases. Unloading forage from the silo is a common factor in three very different occupational respiratory diseases. This report presents 3 cases representative of each of these diseases and emphasizes the differences in history, clinical features and prognosis. (See Cases 1, 2, and 3.)

History

The history is the most important information that the physician obtains to make these diagnoses. In silo filler's disease the history must include entering a silo which was recently filled. The nitrogen dioxide and nitrogen tetroxide which are responsible for the pulmonary damage begin to accumulate within hours after a silo is filled.¹ Peak concentrations of the gases occur in the first week and toxic levels persist for approximately two weeks in ordinary silos, and for several weeks in unventilated silos.² The reddish brown pungent gas is sometimes visible in the silo or the silo chute. The symptoms with acute exposure depend on the concentration of the gases and duration of exposure with symptoms usually occurring in all persons exposed. Acute symptoms range from mild irritation of the eyes, nose and throat, and cough, to sudden collapse and death. In the first two days after exposure, manifestations vary from fever, cough and dyspnea to acute pulmonary edema. Mild symptoms usually resolve spontaneously in a few days, but pulmonary edema may require extensive supportive therapy, which may include mechanical ventilation. Steroids are felt to have a beneficial effect.^{3,4} Another phase of the disease occurs after an asymptomatic period of two to five weeks after "recovery" from the acute phase. It may occur even after mild exposure and is not predictable based on severity

of the acute illness. Symptoms include progressive dyspnea, cough, fatigue and sputum production with or without hemoptysis. Biopsy at this stage reveals bronchiolitis obliterans.^{1,3}

A tapering six to eight weeks course of prednisone is the recommended therapy and relapse has occurred in some cases when steroids have been tapered too quickly.^{3,5}

The history in pulmonary mycotoxicosis includes entering a silo several weeks after it has been filled. The top layer of the silage is moldy and removing it

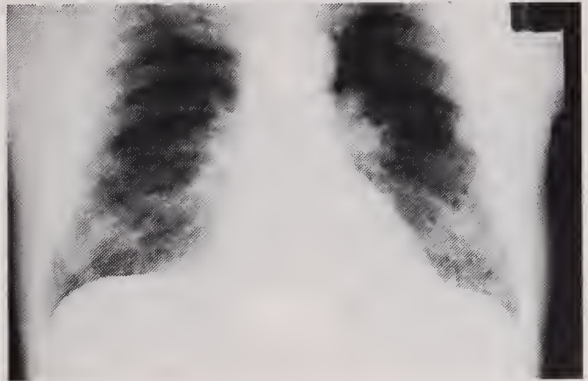


Fig. 1 — Case-1: Diffuse interstitial and nodular infiltrate.

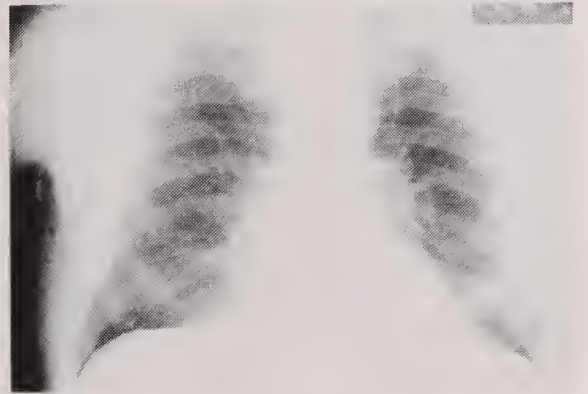


Fig. 2 — Case-1: Two months after steroid treatment the chest radiograph is normal.

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Address requests for reprints to: Terence R. Pladson, M.D.; 2055 N 15 Street, St. Cloud, Minn. 56301.

fills the air and covers the clothing with organic dust which is inhaled in massive amounts. The illness begins several hours later and usually affects all persons exposed. Symptoms include irritation of the eyes, nose and throat, cough, dyspnea, malaise and chills.⁶ Illness may be mild and resemble influenza or severe with a pulmonary edema pattern. Supportive therapy is directed at reversing hypoxia and alleviating symptoms. Anti-fungal treatment is not indicated as the fungi are not considered invasive pathogens. The illness is felt to be secondary to microbial fragments and spores which are inhaled. Activation of the alternative pathway of complement or a host-antigen interaction not involving pre-formed antibodies may be the primary mechanism of lung injury.^{6,7,8} The illness may last several days to a few weeks.

The history in farmer's lung disease includes symptoms after exposure to silos filled several weeks previously. Symptoms also occur after exposure to moldy forage, especially hay, in barns, grain storage bins and stacks. Only sensitized persons develop symptoms. The diagnosis is complicated by differing manifestations of an acute and chronic form. The acute farmer's lung disease symptoms begin 4 to 8 hours after exposure to moldy forage and can include cough, dyspnea on exertion, chills, fever, headache, malaise and chest tightness. All symptoms clear over several days if there is no further exposure. The chronic form is insidious in onset and is slowly progressive. The main symptoms are slowly progressive dyspnea on exertion and chronic cough which is frequently productive of purulent sputum and mimics chronic obstructive pulmonary disease.⁹ The chronic form of farmer's lung disease is especially important to consider in cigarette smokers with an appropriate exposure history.

The examination is not helpful in differentiating these diseases. Diffuse rales may be found in all, as well as signs of hypoxia. Wheezing is most notably uncommon.

The chest radiograph can vary from acute pulmonary edema to interstitial infiltrate. Diffuse nodularity is suggestive of bronchiolitis obliterans of silo filler's disease. Patchy infiltrates which clear in hours to a few days suggest farmer's lung disease. A pattern of diffuse interstitial fibrosis should suggest chronic farmer's lung disease or the late stage of silo filler's disease.

Laboratory Tests

Laboratory tests in silo filler's disease and pulmonary mycotoxicosis are nonspecific. Over 90% of

patients with the farmer's lung disease have serum antibodies against thermophilic actinomyces or aspergilli.¹⁰ *Micropolyspora faeni* and *thermoactinomyces vulgargis* are the most common antigens. The finding of antibodies against these antigens is supportive of the diagnosis of farmer's lung disease, however, the diagnosis is a clinical diagnosis and requires only an appropriate history of exposure and associated pulmonary symptom complex. Farmer's lung disease may occur in the absence of detectable antibodies and antibodies are often present in the absence of disease.¹¹

Lung biopsy is usually not required for diagnosis of these disorders. Histology in the acute phase of silo filler's disease reveals a hemorrhagic pulmonary edema.¹² Biopsy in the late stages of silo filler's disease reveals typical bronchiolitis obliterans.^{1,3} Lung biopsy is uncommonly performed in pulmonary mycotoxicosis but when performed has revealed an exudate of neutrophils and histiocytes in the bronchioles with consolidation of alveoli and exudate in the surrounding interstitial tissue. Methenamine silver stains have revealed large numbers of fungi and cultures of the biopsied tissue have grown up to five different fungi.⁶ Lung biopsies late in the course of pulmonary mycotoxicosis have not previously been reported, however, a pathologic reaction similar to that seen in our patient has been reported after intratracheal injection of moldy hay dust, or zymosan (a substance which activates the alternative pathway of complement) in unsensitized rats and rabbits which has resulted in lung lesions eight days later with granulomas.¹³ A recent review of the pathology of farmer's lung disease has outlined the salient features as interstitial pneumonitis, granulomas with or without giant cells, interstitial fibrosis, foam cells, unresolved pneumonia, foreign bodies, edema, bronchiolitis obliterans, and pleural fibrosis.¹⁴

Treatment

Treatment in all three disorders require supportive measures to correct hypoxia and accompanying complications. Steroids are advocated for the acute pulmonary edema of silo filler's disease which occurs shortly after exposure, and a six to eight week course of steroids is recommended for the later phase of bronchiolitis obliterans when it occurs in silo filler's disease.³ Preventive measures include avoiding exposure to the silo for the first two weeks after it has been filled and the use of powerful ventilation fans in silos. There is no specific treatment for pulmonary mycotoxicosis and signs and symptoms of the illness subside over several days to weeks. Preventive meas-

ures include wearing an effective dust mask when removing the top layer of moldy silage as well as efforts to prevent the silage spoilage. Treatment of farmer's lung disease requires avoiding further exposure to the offending antigens. Dust masks can remove 99% of the fungal spores.¹⁵ Other measures have major financial implications for the farmer and include outside storage of hay, mechanized hay unloading and feeding systems, and giving up dairy farming.

Summary

The term "silo — emptiers' disease" has been used facetiously to describe farmer's lung disease,¹⁶ however, "silo emptiers' diseases" is an appropriate heading for the three entities discussed in this paper. Accurate diagnosis is essential in these disorders with the common thread of silo forage exposure. The prognosis and cost of corrective action to avoid further illness varies immensely among these three disorders. Education of the farmer by the physician is essential in order to avoid the repeated exposure which often occurs.^{16,17} These disorders are especially important because they are all preventable and usually strike an otherwise healthy and productive person.

Case 1

A 55-year-old farmer filled his silo in June with oats. Two days after filling the silo he climbed into the silo to make the silo unloader operational. While climbing up the silo chute he noticed a strong odor of gas which was pungent. Burning of the eyes, nose and throat, and cough began immediately. One of the top doors of the silo had been left open allowing the fumes to vent into the silo chute. He closed the door connecting the silo with the chute and climbed to the top of the silo where a ventilation fan was running. At the top of the silo where the fan was running there was little or no irritating gas. Symptoms occurred primarily while climbing up and down the silo chute. He climbed to the top of the silo at least three times within the next hour. The patient experienced a minor cough for the next one to two days but did not develop fever, dyspnea or hemoptysis. Four weeks later the patient developed a dry non-productive cough associated with dyspnea with hard exertion. Dyspnea progressed over the following week so that at the time of presentation the patient had dyspnea with mild exertion. He had developed a productive cough with blood-tinged sputum. The patient was otherwise in good health and did not smoke cigarettes.

Physical examination revealed rales to the midlung fields. Chest radiograph (Figure 1) revealed a diffuse

interstitial and nodular infiltrate. Arterial blood gases revealed a PaO₂ of 57, a PaCO₂ of 33 and a pH of 7.43. Pulmonary function tests revealed an FEV₁ of 84% of predicted, an FVC 98% of predicted. Total lung capacity and diffusion of carbon monoxide were normal. The flow volume loop revealed changes consistent with minimal small airways obstruction. Fungal serology titers and hypersensitivity pneumonitis antigen panel (Marshfield Medical Foundation) were negative. The patient was treated with an eight week-course of tapering steroids.

Eight weeks after admission the chest Xray (Figure 2) showed marked clearing to normal. He was able to tolerate strenuous exertion again without stopping because of dyspnea. The patient was cautioned not to enter his silo during the first two weeks after it had been filled.

Case 2

A thirteen-year-old white male and his father entered a silo, which was filled one month earlier, to remove the top layer of moldy silage. No unusual odor or yellow brown gas was noted. That night the young man developed a dry cough, chills, and shortness of breath. Dyspnea increased over the next few days and he was admitted to the St. Cloud Hospital on 11-08-78. He had no previous history of symptoms



Fig. 3 — Case-2: Non-cardiac pulmonary edema.

from exposure to hay or silage. He had a past history of pneumonia in January of 1978 and March of 1978. His father did not become ill.

Examination revealed diffuse rales, tachypnea, tachycardia and a palpable spleen tip. Temperature was 101.2. The chest radiograph (Figure 3) revealed non-cardiac pulmonary edema. Arterial blood gases revealed a PaO₂ of 36 while on room air. Intermediate PPD skin test was negative. Several studies were negative including a hypersensitivity pneumonitis antigen panel (Marshfield Medical Foundation), fungal serology titers, legionnaires disease titre, and anti-glomerular basement membrane antibodies. The patient was treated with supplemental oxygen and high dose steroids and one day later the PaO₂ on 70% oxygen was 55. Five days after admission the patient was transferred to the Mayo Clinic where open lung biopsy was performed. The lung biopsy revealed small interstitial granulomas felt to be consistent with hypersensitivity pneumonitis (Figure 4). One colony of an unclassified thermomyces species of fungus was grown in tissue culture. Preoperative pulmonary function tests revealed an FEV₁ of 74% of predicted, and FVC of 71% of predicted, an FEV₁ % of 82% and a diffusion of carbon monoxide of 57% of predicted. The total lung capacity was 79% of predicted. He was treated with Prednisone which was tapered over several weeks and he was asymptomatic within three to four weeks time.

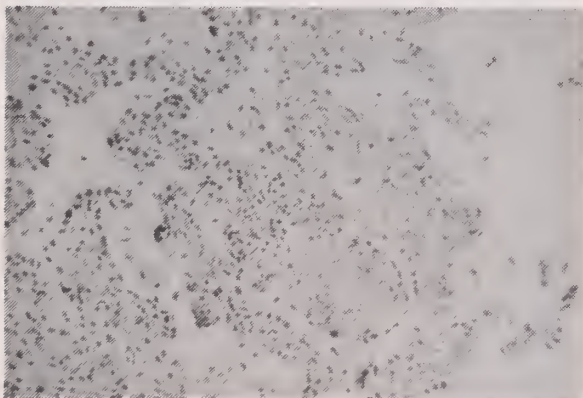


Fig. 4 — Case-2: Lung biopsy revealing alveolar thickening and small interstitial granuloma.

The patient was re-evaluated slightly over two years after his acute illness. He was asymptomatic and was working on the farm. Because of suspected farmer's lung disease he had been cautioned to avoid further exposure to hay and silage, however, due to lack of symptoms he had gradually returned to all phases of farm work with exposure to hay and silage without recurrence of symptoms. His examination was normal. A chest radiograph (Figure 5) was entirely normal. A hypersensitivity pneumonitis antigen



Fig. 5 — Case-2: Two years after the acute illness the chest radiograph is normal.

panel (Marshfield Medical Foundation) was negative. Pulmonary function tests revealed an FEV₁ of 74% of predicted and an FVC of 93% of predicted and a total lung capacity of 98% of predicted. Unfortunately equipment malfunction prevented measurement of diffusion of carbon monoxide. The patient was cautioned to avoid exposure to the dusty layer of silage removed when opening (uncapping) the silo. Although this case has some atypical features the clinical course is more suggestive of pulmonary mycotoxicosis than farmer's lung disease.

Case 3

A 54-year-old non-smoking dairy farmer was referred for further evaluation of dyspnea and an abnormal chest radiograph in January of 1979. He had first noted dyspnea after exposure to corn silage in 1957. The silo had been filled approximately one month prior to his entering the silo. The silage was dry and dusty and there was no pungent gas. Within hours of exposure he developed shortness of breath and was treated at a local hospital with cortisone and antibiotics. Symptoms resolved over several days. Thereafter he did notice some difficulty with shortness of breath and cough developing after exposure to dusty hay or silage, but dismissed it as unimportant. In June of 1977 he entered a silo that had been filled six months previously and unloaded the top layer of dusty silage. He developed increasing dyspnea, cough and chills that evening. He recovered over the

next several days with medication prescribed by his local physician. He developed slowly progressive dyspnea on exertion and by January of 1979 he was dyspneic after climbing two flights of stairs or walking ½ mile on level ground. This was in sharp contrast to 1977 when he could walk an unlimited distance and work all day without difficulty. He also noted definite worsening of dyspnea and development of cough several hours after exposure to dusty air silage.

Evaluation in January of 1979 revealed late inspiratory rales at the left lung base, but no wheezes. The chest radiograph revealed bilateral interstitial fibrosis most prominent in the left lower lobe (Figure 6). Pulmonary function tests revealed an FEV₁ of 1.91 liters and an FVC of 2.26 liters (predicted values were 3.23 and 4.09 liters respectively). Blood counts and blood chemistry studies were all normal. Rheumatoid factor was negative and a serum hypersensitivity pneumonitis serology screen was negative. Bronchoscopy with transbronchial biopsy was performed revealing only non-specific interstitial fibrosis. No granulomas were present and cultures for TB and fungi were negative. While awaiting final culture reports and after the initial hypersensitivity pneumonitis serology screen was reported as negative another serum sample was obtained and this time was sent to the Marshfield Medical Foundation. The report was positive for precipitins to *Thermoactinomyces vulgaris*.

The diagnosis of farmer's lung disease was discussed with the patient and he was advised to avoid any further contact with hay or silage. He refused to give up farming, but agreed to have a brother manage the dairy farming while he would continue to plant and harvest the crops.

The patient was treated with alternate day steroids with tapering of dose at two to three month intervals. Worsening of his pulmonary function occasionally required re-institution of the preceding higher dose of prednisone. Quite often it was also apparent that the patient had become complacent and was routinely



Fig. 6 — Case-3: Bilateral interstitial fibrosis most prominent in the left lower lobe.

working in the barn with exposure to hay. The importance of avoiding exposure to hay and silage was re-emphasized repeatedly. Pulmonary function tests were repeated in June of 1979 at which time the FEV₁ was 2.17 liters, the FVC was 2.56 liters, the total lung capacity was 3.96 liters (65% of predicted) and diffusion of carbon monoxide was 18.2 ml carbon monoxide per mlCO/min/mmHg (single breath method — predicted normal 22.8). By March of 1983 the pulmonary function had improved to a FEV₁ of 2.4 liters and a FVC of 3.1 liters. The total lung capacity was 5.76 liters (93% of predicted) and diffusion of carbon monoxide was 19.2 mlCO/min/mmHg. The prednisone had been tapered to 10 mg every other day. Throughout this period of time there has been no change in the patient's roentgenogram, but he had notable improvement in exercise tolerance.

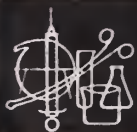
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BRIEF SUMMARY

PROCARDIA* (nifedipine) CAPSULES

For Oral Use

INDICATIONS AND USAGE: I. **Vasospastic Angina:** PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation; 2) angina or coronary artery spasm provoked by ergonovine; or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and/or adequate doses of beta blockers.

II. **Chronic Stable Angina (Classical Effort-Associated Angina):** PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS:

Known hypersensitivity reaction to PROCARDIA.
WARNINGS: **Excessive Hypotension:** Although in most patients the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and, if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PROCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation. It is important to taper beta blockers if possible, rather than stopping them abruptly before beginning PROCARDIA.

Congestive Heart Failure: Rarely, patients, usually receiving a beta blocker, have developed heart failure after beginning PROCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS: **General:** **Hypotension:** Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug interactions: Beta-adrenergic blocking agents. (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates: PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis: Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility: When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy: Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in rats, mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients; transient hypotension in about 5%; palpitation in about 2%; and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication. Additionally the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PROCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LHO, SGOT and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PROCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PROCARDIA therapy, has been reported twice in the extensive world literature.

HOW SUPPLIED: Each orange, soft gelatin PROCARDIA CAPSULE contains 10 mg of nifedipine. PROCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66), 300 (NDC 0069-2600-72), and unit dose (10x10) (NDC 0069-2600-41). The capsules should be protected from light and moisture and stored at controlled room temperature 59° to 77°F (15° to 25°C) in the manufacturer's original container.

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LABORATORIES DIVISION
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Antiepileptic Drug Analysis in Minnesota

WILLIAM E. KARNES, M.D.*; JOHN R. GATES, M.D.† and DAVID W. STICKLE, M.D.‡

On the basis of the 404 questionnaires returned (of the 420 sent) by laboratories listed with the Division of Medical Laboratories (Minnesota Department of Health), 63 laboratories were found to perform assays for at least one anticonvulsant drug. Of these 63, 24 were not participating in a drug survey for quality assurance.

THE MINNESOTA ADVISORY Task Force on Epilepsy was created by the Minnesota legislature in 1981 to study and to report on the status of programs, services, and facilities for epileptic persons in Minnesota. The Task Force was asked to analyze the findings and recommendations of The Commission for the Control of Epilepsy and Its Consequences¹ and to report to the governor and legislature by January 15, 1983, its own specific findings and recommendations.

The Commission report included recommendations in a number of areas, one of which is entitled "Medical Services." According to the report: "... in a 1972 survey of 109 laboratories, fewer than one-half of the laboratories determining anticonvulsant drug levels had results within an acceptable range. Participation in a quality assurance program increased this reliability to 90-plus percent."

Concerned over interlaboratory variability and inaccuracy in the reporting of anticonvulsant drug levels, the Epilepsy Foundation of America sponsored a voluntary drug survey program and workshop in 1976, supported by a grant from the National Institute of Neurological and Communicative Disorders and Stroke. Sponsorship for this program was subsequently shifted to the American Association for Clinical Chemistry. Improved performance was correlated with participation in this survey.^{2,3} We have been unable to find any subsequent study showing satisfactory performance by nonparticipating laboratories.

Anticonvulsant drug monitoring has become an indispensable tool in the management of the patient with epilepsy.⁴ Monitoring helps by ensuring patient compliance, by determining whether toxic symptoms

are the result of excess levels of one or more drugs, and, in the event of a seizure, by indicating whether it was associated with adequate or inadequate levels of anticonvulsant drug(s).

Some have argued that such surveys add to the already astronomical costs of medical care, that in-house quality assurance is practiced in most laboratories, and that in all likelihood the anticonvulsant drug determinations were accurate in most laboratories in Minnesota today. However, the papers cited above and a subsequent one concerning the reliability of serum theophylline determinations⁵ indicate a need for further study.

With the help of the Division of Medical Laboratories of the Minnesota Department of Health, a questionnaire was designed (Appendix) and sent with a cover letter to all Minnesota laboratories listed with the Division of Medical Laboratories. Of the 420 questionnaires sent out, 404 were completed and returned. Sixty-three laboratories performed determinations for at least one anticonvulsant drug (Table).

Of the 63 laboratories determining anticonvulsant drug levels, 39 participated in a "quality assurance program." After distribution of the questionnaire, we were advised that the term "quality assurance program" was ambiguous and might be interpreted as

TABLE
Serum Anticonvulsant Drug Level
Determinations in Minnesota

Drug	No. of laboratories performing analysis
Carbamazepine (Tegretol)	34
Clonazepam (Clonopin)	2
Ethosuximide (Zarontin)	12
Mephobarbital (Mebaral)	9
Methsuximide (Celontin)	3
Phenobarbital	58
Phenytoin (Dilantin)	62
Primidone (Mysoline)	30
Valproic acid (Depakene)	12

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in-house running of controls of known value rather than the blind determination of unknowns submitted by outside reference laboratories. The term "survey" would have been more accurate. We presume that our designation of three specific programs in parts a, b, and c of question five overcame the ambiguity of the initial question.

Of the 39 laboratories already participating, 10 indicated that they participated in the American Association for Clinical Chemistry Therapeutic Drug Monitoring Program, 13 in the Center for Disease Control Drug Monitoring Survey, 24 in the College of American Pathologists Therapeutic Drug Monitoring Survey, and five in some other program.

It is of considerable interest to us that, of the 24 laboratories not now participating in a quality assurance program for anticonvulsant drugs, 23 indicated they would participate if legislation required participation in order to be eligible for third-party payment for these services and one laboratory indicated that it would no longer perform the test(s).

It is also of interest that, of the 39 laboratories participating in a drug survey, 31 (79%) indicated that they would be willing to have the results of their quality assurance testing reported to a state agency and become a matter of public record, five laboratories said they would not, and three laboratories did not answer the question.

On the basis of the above observations and findings, the Task Force made the following recommendations concerning laboratories in Minnesota that perform anticonvulsant drug analyses:

"4. A study should be undertaken by the Department of Public Health, Division of Medical Laboratories, of those laboratories which perform blood anticonvulsant drug analyses to determine the accuracy of performance and its correlation with each laboratory's participation or nonparticipation in a regular anticonvulsant drug survey program. Anticonvulsant drug levels are a measure of the adequacy of the medications taken by an individual to control epilepsy. Their accurate measurement is vital to the individual's seizure control. If the study shows that significant numbers of the laboratories [have] substandard performance, and if this poor performance is correlated with nonparticipation in an anticonvulsant drug survey program, the following three recommendations should be implemented:

- a. Each laboratory performing anticonvulsant drug analyses should be encouraged to participate voluntarily with at least one of the following national anticonvulsant drug survey programs for each anticonvulsant drug measured by the

laboratory. The results should be reported to that laboratory and to the Division of Medical Laboratories of the Minnesota Department of Health.

- (1) American Association for Clinical Chemistry.
 - (2) Center for Disease Control Drug Monitoring Survey.
 - (3) College of American Pathologists Therapeutic Drug Monitoring Survey.
- b. Laboratories should be encouraged to release the results of those surveys for yearly publication in a brochure listing all state laboratories performing anticonvulsant drug analyses.
- (1) Only those laboratories and those drug level determinations considered to be satisfactory would be published.
 - (2) The brochure would be available to any person requesting it from the Division of Medical Laboratories.
- c. Should the voluntary program recommended fail to enlist the support of the majority of laboratories engaged in determination of anticonvulsant drug levels, legislation requiring participation and reporting of results of appropriate drug surveys before certification of that laboratory for third party payments should be enacted."

Summary

Because of the importance of reliable measurement of anticonvulsant drug levels in the monitoring of patients with epilepsy, a survey of laboratories in Minnesota was conducted by members of the Minnesota Task Force on Epilepsy in cooperation with the Division of Medical Laboratories, Minnesota Department of Health, to determine which laboratories performed anticonvulsant drug assays, which drugs were measured, and whether the laboratory had participated in a voluntary anticonvulsant drug survey. Questionnaires were sent to the 420 laboratories listed with the Division of Medical Laboratories, and 404 completed questionnaires were returned and analyzed. Sixty-three laboratories measured at least one anticonvulsant drug. Twenty-four (38%) of these did not participate in one of the drug surveys. Because earlier studies had shown that participation in one of these surveys was correlated with acceptable performance, the Task Force made the following recommendation:

A study should be undertaken by the Department of Public Health, Division of Medical Labor-

ANTIEPILEPTIC DRUG ANALYSIS — KARNES ET AL.

atories, of those laboratories that perform blood anticonvulsant drug assays to determine the accuracy of performance and its correlation with each laboratory's participation or non-participation

in a regular anticonvulsant drug survey program.

Depending on the results of the study further recommendations were to be implemented.

APPENDIX

- | | | |
|---|--------------------------|--------------------------|
| | Yes | No |
| 1. Does your laboratory perform tests on serum anticonvulsant drug levels? | <input type="checkbox"/> | <input type="checkbox"/> |
| If your answer to question 1 is "no," you need not complete the remainder of the questions. Simply return it to us in the preaddressed envelope. If your answer is "yes" to question 1, please go on to question 2. | | |
| 2. Which of the following anticonvulsant drug levels are performed in your laboratory? | Yes | No |
| Carbamazepine (Tegretol) | <input type="checkbox"/> | <input type="checkbox"/> |
| Clonazepam (Clonopin) | <input type="checkbox"/> | <input type="checkbox"/> |
| Ethosuximide (Zarontin) | <input type="checkbox"/> | <input type="checkbox"/> |
| Mephobarbital (Mebaral) | <input type="checkbox"/> | <input type="checkbox"/> |
| Methsuximide (Celontin) | <input type="checkbox"/> | <input type="checkbox"/> |
| Phenobarbital | <input type="checkbox"/> | <input type="checkbox"/> |
| Phenytoin (Dilantin) | <input type="checkbox"/> | <input type="checkbox"/> |
| Primidone (Mysoline) | <input type="checkbox"/> | <input type="checkbox"/> |
| Valproic acid (Depakene) | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Does your laboratory participate in a quality assurance program for anticonvulsant drugs? | <input type="checkbox"/> | <input type="checkbox"/> |
| If your answer to Number 3 is "no", answer only question Number 4 and then return the questionnaire. If your answer to Number 3 is "yes", skip to question Number 5. | | |
| 4. What would be your response to legislation requiring participation in a quality assurance program in order to be eligible for third party payment for these services? | Check one | |
| a) We would participate in a quality assurance program | <input type="checkbox"/> | |
| b) We would continue to perform the tests but would not participate. | <input type="checkbox"/> | |
| c) We would no longer perform the tests. | <input type="checkbox"/> | |
| 5. What quality assurance program for anticonvulsant drugs does your laboratory participate in? (Check yes or no for each.) | Yes | No |
| a) American Association for Clinical Chemistry Therapeutic Drug Monitoring Program. | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Center for Disease Control Drug Monitoring Survey. | <input type="checkbox"/> | <input type="checkbox"/> |
| c) College of American Pathologists Therapeutic Drug Monitoring Survey. | <input type="checkbox"/> | <input type="checkbox"/> |
| d) Other (Specify which one(s) if yes) _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Would your laboratory be willing to have the results of its quality assurance testing be reported to a state agency and become a matter of public record? | <input type="checkbox"/> | <input type="checkbox"/> |

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Cows and Calves, Mothers and Infants

Some Ideas from Dairy Science

KAREN N. OLNESS, M.D., F.A.A.P.*

PEDIATRICIANS AND others who work with children are usually aware of the importance of interdisciplinary communication in solving child health problems. But, even within the field of pediatrics and its related disciplines, it is easy to fall short in evaluating a single child, in the ordering, integration and comparison of bits of knowledge from laboratory, radiology, family, school, and other community resources.

In this brief review of some data from dairy science, I do not intend to further confuse or to suggest that there are direct relationships between caring for calves and children, but rather to suggest some ideas for future pediatric research based on dairy science.

I have followed dairy articles for many years, as a hobby related to my childhood memories of caring for the cows and calves on the family farm. I have been impressed with the direct clinical application of basic nutrition science in dairying, with emphasis on careful observations of growth patterns, prevention of infectious diseases, and stress reduction in developing a basis for productive, financially profitable dairy herds. Therein lies the essential difference in motivation between caring for cows and calves and mothers and infants. In the larger sense, society might have a motivation in promoting healthy children that is akin to the profit motivation of dairymen.

The Cow Starts Here

The phrase is noted frequently in ads for various vaccines, vitamins, and feeds for calves. Generic to the success of the dairy farmer is the focus on prevention. Currently, more than sixty vaccines are available to deal with potential diseases of calves. Not all are very effective, and much research continues in this important area. Gene splitting techniques are being adapted to produce more effective vaccines for calves. In efforts to prevent early, costly disease, dairy research has carefully delineated the absorptive

response of calf intestine to the immunoglobulins in colostrum. Calves are found to have a diminished absorptive response to colostrum from 4 to 24 hours. Two liters of colostrum have been proved to be sufficient to satiate the absorptive cells in calf intestine; it is recommended that this amount be given within the first two hours of life.

A major killer of dairy calves is the disease, scours. Scours is an enteric illness caused by enterotoxigenic *escherichia coli*, corona viruses, and mechanical causes which facilitate growth of pathogens. Over-feeding leads to so-called mechanical scours. If feedings contain excessive glucose, the glucose will be used as fuel for bacterial multiplication and scours may develop. Recommendations for avoidance of calf scours include feeding no more than 9 percent of the calves body weight in milk per day, feeding the same amount of milk or replacer each day, feeding at the same time each day, making a gradual changeover from milk to milk replacer formulas, and using milk replacers which are low in fiber content. The latter recommendation is based on research which has found that plant proteins are difficult for the calf to digest in the first weeks of life. Over and over, the dairy literature emphasizes that cow's milk is the preferred food for the newborn calves.

Much dairy calf research has investigated appropriate housing for animals including types of hutches and ideal temperatures. In general, calves are found to stay healthier in cold than in warm housing. Pica, particularly the eating of dirt and wood chewing, is a problem in dairy animals and has been found associated with anemia, mineral deficiencies, and "boredom".

Growth charts for calves are very precise and vary according to breed with specific charts for Holstein, Guernsey, and Jersey breeds, for example. Dairy research has studied calves longitudinally who have been affected with newborn pneumonia. Because permanent lung damage prevents calves from reaching their genetic capacity in growth and productivity it is recommended that these calves should be slaughtered the prescribed length of time after treatment.

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Based on a review presented at Grand Rounds, Minneapolis Children's Medical Center, October 12, 1982.

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An interesting differential diagnosis in calves affected with seizures is water deprivation. Sometimes farmers will restrict water in individual calf pens because decreased urine production reduces the mess in the pens. If such animals subsequently have unlimited access to water, they may rapidly develop symptoms of water intoxication. Treatment includes diuretics and concentrated salt solutions.

Nutrition of Cows

Dairy journals frequently have articles referring to energy shortages in cows. Dairy research documents that cows who are energy short conceive with difficulty. Ovarian function is suppressed. Furthermore, Vitamin A is a primary vitamin of concern in normal reproduction and prevents abortions as well as reduces incidence of retained placentas.

Dairy cows vary in quality and quantity of milk production and this depends on many factors including genetics, feeding practices, and stress. It has been learned that milk letdown speed has a heritability of about 0.20 in cows and is an important consideration in selection of cows. The dairy industry notes that gratification for the cow from the milking experience is important. Milk varies from cow to cow in terms of volume, fat and protein content. Detained records of individual milk analysis become the basis for decisions about calf feeding, breeding, and culling cows.

Prospective research has determined that short breeding intervals do not pay for dairymen. The maximum milk production, on a herd basis, is achieved with 12.6 month calving intervals. Research also has determined that overfeeding between lactations is risky, resulting in the "fat-cow" syndrome from which animals may die. Furthermore, some dairy specialists recommend milking cows before calving to prevent udder damage.

Social Stress

It is well recognized that animals may become stunted on the basis of social stress. Studies of heifers note that those butted around at the grain feeder would eventually go to the hay feeder instead. Farmers are urged to avoid this occurrence in order to avoid costly stunting in the heifers. It is recommended that smaller heifers should be held back with smaller peer groups to facilitate fair competition. It has also been noted that inadequate bunk space for dairy cows lets herd "bosses" take over. They will "pick through the food, slobber on it, and sometimes just stand there, not eating, while a bunch of timid, hungry cows look on." The temperament of cows has been studied in depth. It is reported that most attempts

to reinforce correct behavior and discipline improper behavior in cows is successful. Behavior as a reason for culling cows occurs in only 1% of cows culled.

Stevens, Olson, and Anderson of the University of Minnesota have designed a systematic way to analyze health problems in a whole herd through metabolic profile testing. In conducting their sampling procedure, they have recommended that animals be kept relaxed, because alarm will invalidate blood chemistry results. Analysis of such samples forms the basis for recommendations regarding improvement of herd health including specific feeding recommendations and stress reduction methods.

Recommendations for reduction of social stress in dairy cattle include provision of adequate feeding, drinking, and resting space; avoidance of disturbing the social order of a given group; consistent routines; prevention of disturbances such as noise and strangers; safe and comfortable walking routines; a gratifying milking experience; and communication with animals via voice and touch.

Summary

As I have read the dairy literature, I have been impressed by the detailed measurements required in feeding practices, the myriad of environmental details which must concern the dairy farmer, the use of computers in barns to facilitate remembering these details and data collection on individual animals, and the focus on stress reduction for the animals. Questions related to human medicine raised by this pursuit include:

1. Should every newborn human receive colostrum at least once?
2. Should the quality of human milk be assayed at regular intervals during a lactation period and recommendations for feeding infants and mothers be made on this basis?
3. Should prospective assays of human milk be the basis for recommendations concerning whether or not a given infant should be breast fed?
4. Are enteric diseases in newborn humans related to the types of nutrients ingested to a greater degree than we presently suspect? Are they related to overfeeding?
5. Is there the equivalent of "fat cow syndrome" among non-lactating mothers?
6. Does stress affect results of biochemical analyses in children and adults?
7. How can we facilitate gratification for nursing mothers?
8. Does the variety of foods offered from day to

day to human children and mothers affect nutrition, immunity, or fluid and electrolyte balance adversely?

9. Do some children suffer chronic water deprivation?
10. Should small children be held back in certain areas so they can compete more fairly?

Obviously, research in some of these areas could

not be done in humans. Some of these questions, however, may be appropriate to future research, particularly those related to quality of human milk. The dairy industry is very precise, scientific, and cost conscious. In being so, it has recognized the importance of some precise nutritional and behavioral interventions to good health and productivity. Can we do less?

Echoes from Our Past

Life in the Fast Lane

JACK D. KEY, M.A., M.S.*

A. C. Simonton, M.D. in a letter to the Editor, *Journal of the American Medical Association* 31:1253-1254, 1898, discusses the curse to society of bicycling.

. . . The gentleman who had prophesied that the bicycle would have a serious effect on childbirth had a mistaken idea of the entire proposition. While bicycle riding may deform the pelvis, it will have little or no effect as regards the ease of childbirth. And why? For the simple reason that "bike" riders do not have babies. Where or who is the physician that has attended a "bike" rider in confinement? Will the female rider throw aside her wheel long enough to have a baby, let alone to rear a respectable sized family? The bicycle is a nuisance and a curse instead of a blessing. While it may have a beneficial effect physically upon a few, yet the ill effects upon the many ten thousand times overbalance it. The deaths and the maiming from wheel accidents almost equal perpetual war. The injury to heart and kidneys of thousands must be added. Then what of the nuisance of the machines on street and sidewalk everywhere? In the public thoroughfare they are a constant menace to teams and footmen, and as there is no bounds to the impudence and effrontery of these wobblers, they presume also to usurp the sidewalks in most cities, whether permitted or not by law? Think of such ungovernable vehicles approaching foot-people on sidewalks every few rods as they proceed, at a speed of twelve to fifteen miles an hour, jingling their little bells, warning you to jump aside or be run over or maimed! . . .

The advent of this horrid means of locomotion is an instance in which the inventive genius of man has over-toppled itself, or at least he has invented a machine that causes a great many individuals to be overtoppled . . .

*Librarian, Mayo Clinic, Rochester, Minnesota.

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A Clergyperson Looks at the Physician

WILLIAM E. HULME, Ph.D.*

This article was prepared in response to an invitation from the Ramsey County Medical Society of St. Paul, MN to address it concerning how, I, representing the clergy, view you, as physicians in our society. I have been a parish pastor, a hospital chaplain, and for the past twenty-seven years, a teacher of theological students in pastoral care and counseling. In this program the students spend an afternoon a week in hospitals visiting under the supervision of the chaplain. So I've had a great deal of interprofessional contact with you and your profession. I suppose this is why I received this invitation. But I did not want simply to give my impressions regarding physicians. So I attended a meeting of the St. Paul Clergy Association and asked these clergy to respond in writing to the question of what they would say to physicians if they had this opportunity. What I am presenting, therefore, is the major emphasis of these responses together with my own observations.

The principal consensus coming from clergy regarding you as physicians is that you have a superiority professional complex and we have an inferiority professional complex. We are coming out of ours. For a long time we considered ourselves appendages to you in the care of the sick. Now we increasingly see our own identity and importance in the care of the total person. And you are coming out of your complex as well. We see your increasing emphasis on the total person in illness and health and consequently your growing openness to teamwork with other professionals.

The Professional Pedestal

My first point concerns your professional pedestal. I am well aware that this is a two-way street. We criticize you for being on it and yet we ask for it. "The Doctor says," is the nearest thing we have in our culture to "Thus says the Lord." Yet we are disappointed when you make mistakes. We want to believe that you are *as God*. On the other hand, we want you to be more open — to admit you have choices to make in treatment — that your decisions are subjective as well as objective in their evaluation — and that you do a lot of hoping. But do we really want this? We seem to want what we don't want from

physicians.

A clergy friend related to me that in a recent visit to his physician he was asked by the physician what he thought regarding the possible options for treatment. "I don't know if I like that," he said. Yet he like the rest of us is saying that the patient ought to be more involved in decision making. On the other side of the issue, a neighbor commented to me concerning her little daughter who this winter had a long siege of illness. "We're putting a lot of drugs into that little body," she said. "I don't know what to think about that — I guess you just have to trust your doctor."

Trust is needed, of course, but so also is responsibility. She could seek a second opinion if she is troubled. But would that be an affront to her own doctor? Some of us are concerned about this — and even if we were not, many of us don't know how to go about getting a second opinion without the risk that the child may end up as nobody's patient. The difficulties do not end here, however. Suppose my neighbor were to get a second opinion and it was a conflicting opinion. Now *she* would have to make the decision between authorities — and this may be more frightening than not having a decision to make.

The awe of a patient for the physician may lead to passivity, which in contrast to a healthy trust, may block communication. Because of this awe the patient may not press the physician or even ask concerning what he or she needs to know to quiet the confusion, doubts, fears and misgivings that "being in the dark" breeds. Not having his or her need for understanding satisfied the patient's anxiety only heightens and hinders his or her cooperation in the healing process.

The pedestal position provides few opportunities for checks and balances with outside voices — for feedback from consumers and other professionals. The clergy were once on this same pedestal. In a previous era we had the power of life and death as you do now, except that our power pertained to life *after* death. That pedestal did us no good.

Power and Control

Closely associated with the professional pedestal is your association with power. We see you as having a tight control over the health care system. This control is buttressed by your political identification. Your

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political lobbyist, The American Medical Association, makes its contributions to congressional candidates like other political interest groups, and it seems to work well. Probably because of the AMA's position we see you as politically conservative, identified with the *Haves* of society, but with many exceptions to this trend. Despite its pronouncements that it seeks only the welfare of people, we tend to see also in the AMA's political activities, the need to protect the physician's power, control and income. In resisting changes in the system of health care, you indicate you like things the way they are. But some of your consumers don't. There is need for more rational dialogue concerning the present system.

Improvement in Patient Relating

The clergy tend to see a need for improvement in your personal relationships with patients. These clergy are often ministering to the same people. In talking with the spouse of a friend of mine who was in a coma, I asked what the physician had to say. "I can't get much out of him," she said. I realize there are again two sides to this. The physician may not be able to tell her what she wants to hear. I also realize you probably can't get much out of some of your patients either! Poor communication seems endemic to our society.

Nevertheless we tend to see you as in a hurry and feel guilty taking any more time to satisfy our need for understanding, after perhaps sitting in the outside waiting room for $\frac{3}{4}$ of an hour and in an inside waiting room for another half hour. Or if in the hospital, the patient may anticipate your visit the whole day. I instruct my students that when you enter the hospital room, they are to leave immediately because the patient has been waiting for you and needs all the available time.

We clergy see an improvement in your satisfying the patient's need for understanding — for personal care. This satisfaction is healing in itself. When I was a hospital chaplain, I visited a Vietnam War veteran who had been in the hospital for two months and seemed increasingly discouraged. When I asked him how his physician viewed his apparent lack of progress he said, "I never ask him — he comes with his students and points out things to them in language I don't understand, says a few words to me and before I realize he's leaving."

"Listen," I said, "I want you to ask him tomorrow when he comes — and I'm going to ask you what he said." When I entered his room the next day, he had a big smile. "I got him today," he said. "It was the

same way as usual but as he was leaving I said, 'Damn it — come back here!' It was like I'd hit him with a brick. He turned around and I said, 'I've got some questions to ask you.' He came back and sat down — and I asked them. It was great. He stayed as long as I wanted him. I didn't like all that he had to say — but I feel better."

A More Positive Approach to Aging

Our culture is in need of a more positive approach to aging and physicians can play a key role in changing the current negative image. People tend to accept and even anticipate what they need not — because of what they have been told about aging. At age 35 I developed bursitis in my shoulder from playing volleyball. When I went to the local orthopedic physician he asked me, "How old are you?" "I'm 35," I said. "Well," he said, "You can begin to expect these things now."

I didn't believe it then and I don't believe it now. Bursitis, or any other ailment, may not be the result of aging. In fact, few things are the automatic result of aging. Yet when we tell people that they can expect such ailments as they age, it can have the same effect as a placebo, except in the opposite direction. We program ourselves to age badly. When physicians use the term degeneracy with their patients in describing changes in the body — as has been done with me on more than one occasion — these patients may begin to see themselves as degenerating and to feel this way. We write off too many symptoms as due to aging, and this leaves the treatment less effective because the diagnosis is inadequate.

Ours is an addictive culture. We seek quick even if temporary relief from suffering and are resistant to doing what needs to be done to become more genuinely healthy. Physicians have at times, particularly in the past, fed into this addiction. The Chairman of the Senate Health Committee recently stated that our big drug problem is Valium and Lithium, not because they cannot be helpful but because people become addicted to them as a way of coping with life rather than using them as transitional help in difficult situations. These drugs require prescriptions.

Yet people ask you for them, pressure you for them, because they do not want to deal directly with needed changes in their *person*. In reference to aging, taking medication seems to feed into the pre-occupation of some older people with their ailments. What they really need is a vision, a purpose, a meaning for living. They become chronically depressed because of what society has done to them. Lacking a place of importance in society they turn in on them-

selves — on their bodies.

We need a total person approach to the aged. We also need an approach that influences society — so that ageist discriminations are removed and the vacuum in many older people's lives can be filled with important things to do. A constructive approach to aging is but one example of how clergy and physicians can work together.

Clergy and Physicians Working Together

Like you, clergy are involved with suffering. Like you, they are also involved with the family of sufferers. Like you, they have eight years of higher education. Yet it takes more than scholastic excellence for a healer. Healing also comes through caring relationships. Like you, clergy are concerned with the health of persons.

Clergy and physicians are natural partners. In fact, in antiquity, as you know, the same person fulfilled both functions. The subsequent fracturing of specialization — and now specializations within specializations — can only be bridged by teamwork. We can be of help to you where emotional, relational and chemical addiction factors are involved in illness. Also with life-style diseases. I am thinking of the book, *None of These Diseases*, written by a physician, showing the relationship between life-style and illness. Clergy and physicians are often dealing with the same people. So we obviously need to do more together.

Pastors not only have a family link, but also provide an extended family in an organized caring community — the parish or congregation — which can be an influence for healing. Forty per cent of the people in this country are church goers. In some communities like ours, it is much higher. This means that close to 50% of your patients are regular church goers. With more teamwork between us, our churches could be the source of much prevention of disease, particularly in terms of life-style, of the handling of troublesome emotions, of stress, and in the promotion of healthy emotions and inner serenity. Clergy generally believe the initiative for such cooperation is mostly from their end. They would like more such cooperation and would like more initiative for it to come from you.

Caring for the Ill at Home

We could work together to promote more care for the ill in their own homes. There is no point in being hospitalized or placed in a nursing home if one can be

treated just as well in one's home or on an outpatient basis. Institutions are not the best surroundings for healing. Their routine and structure disrupt the "security of the familiar" and the controlled ambience of one's home. Institutions are for providing treatment which cannot otherwise be given. We need your help in freeing up insurance for home care as it is now for hospital and nursing home care. You have more clout here than we do.

Clergy are good allies in this endeavor. Not only do we have access to the homes of people but we also can provide the people resources from beyond the home that may be needed to supplement home care. At the same time the skilled sources can come from health care professionals.

Partners for the Sanity and Preservation of the World

We also can team up for the survival of human life on our planet. Both clergy and physicians now share a common calling as prophets in the preservation from a nuclear holocaust. It was a thrill to hear Dr. Helen Caldicott, representing, "Physicians for Social Responsibility," and sponsored by the United Campus Ministries, speak to an overflowing crowd at the University of Minnesota on the madness of the nuclear buildup. There has been a not too subtle change in our national policy from nuclear armaments as a deterrent to nuclear war to nuclear armaments as a way of fighting a war. Dr. Caldicott stressed the lack of capacity for medical care in any such conflagration. The collapse of a floor at the Hyatt Regency Hotel in Kansas City provided a mini-example. Even though medical resources were close by, a physician in attendance stated that they were insufficient for the need in that tragedy which could not even be compared to the magnitude of a nuclear explosion.

Now is a time when "the Doctor says" may be helpful. The AMA is to be commended for its stand in this matter and for calling on its membership to inform President Reagan and members of Congress about the "medical consequences of nuclear war." I am grateful for the clarity of the December, 1981 annual meeting of the Association in stating that "there is no adequate medical response to a nuclear holocaust." The President was given "Doctor's Orders!"

Together — you with your indispensability in medical care and we with our appeal to values and priorities — we may tip the balance for the sanity of the world in the preservation of life on earth.

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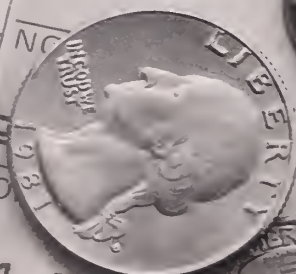
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History

Samuel Thomson and Thomsonian Medicine The Near-Destruction of American Medicine

RAYMOND C. BONNABEAU, JR., M.D., Ph.D.*

IN THE EARLY DECADES of the 19th century, the regular practice of medicine had fallen into sizable disrepute in the young United States. In the late 18th and early 19th centuries, the established medical leader was Benjamin Rush (1745-1813). His theory, the prevailing theory of the period, was that the commonest disease entity of the day, fever, was due to debility, with an increase in blood vessel constriction producing heat and, therefore, fever, mediated through the nervous system. His heroic use of anti-phlogistic methods of treatment — that is, bleeding and calomel — became widely used. These methods of treatment, commonly used by regular physicians — and, I might say, widely abused — ran into trouble when it became obvious to many, including some physicians themselves, that they produced no real disease cures. In fact they appeared, at times, to make patients even worse. Multiple excessive bleedings had, for instance, hastened the death of George Washington in 1799. Physicians at the bedside and Washington's overseer had bled him to the tune of approximately 2500 ccs. This helplessness in the medical profession became particularly evident during the great Asiatic cholera epidemic of 1832 in North America. Their inability to cure and, at times, more obvious ability to hasten a patient's demise while demanding an extremely high fee, led to a near total loss of faith by the public in the regular medical profession. During this period, the only alternative to the regular medical profession was botanical medicine practiced by so-called root and herb physicians, or by local healers who might be relatives or friends. These irregular healers, who used available botanical materials, had been present for generations, and, thus, there was a precedent for this type of folk medicine. The time was, therefore, right for the medical healing gospel as preached by Samuel Thomson.

Thomson was born in Alstead, New Hampshire, in 1769. According to Thomson himself, he was very curious as a young boy to know the names of all the herbs and plants which grew in the area in which he lived. His fascination and interest was fed by a widow named Benton, who lived near his family, and who

functioned as the local herb and root doctor. This woman befriended young Thomson and took him with her when she gathered herbs, teaching him the names of the various medicinal plants.

As a young boy, while helping his father do farm chores, Thomson badly cut his ankle, and when the wound did not heal, was taken to a physician by the name of Kitteridge, who helped to cure him by a method of medicine, "... which was prepared by himself; from the roots and herbs of our own country . . ." Other incidents of a similar vein helped shape Thomson's thinking as a young person.

In the year 1790, his mother developed measles and died of "galloping consumption," probably a pneumonic complication. Thomson wrote, "The doctors gave her over and gave her disease the name of galloping consumption, which I thought was a very appropriate name; for they are the riders, and their whip is mercury, opium, and vitriol, and they galloped her out of the world in about nine weeks." Thomson blamed the regular medical system as it existed at the time for killing her.

Another event of importance in Thomson's life was the accidental discovery of lobelia inflata, which ultimately became an important emetic herb. While out mowing a field one day, he picked the plant and gave it to the boy next to him, who ate it and became violently ill, vomiting many times, but recovered with a heightened sense of well-being. This event and plant would form the backbone of Thomson's medical system.

Following the birth of a child, his wife also nearly died at the hands of regular physicians, some seven in number. He then dismissed them and brought in two root and herb doctors who, apparently, he felt, cured her. It was shortly after this that he decided to treat his family solely using botanical remedies, along with hydrotherapy, or steam baths.

Up to this time, Thomson and his family had subsisted on farming. He gave up his farm, however, about 1805, and became a successful itinerant herb doctor in the New England area. During this period, he developed what could be termed his system of medicine. It was based on heat. Thomson felt that cold, or the lessening power of heat, was the cause of

*Department of Surgery, Bethesda Lutheran Medical Center, St. Paul, Minnesota, and University of Minnesota Health Sciences Center, Minneapolis, Minnesota.

all disease. A state of perfect health, according to Thomson, resulted from a balance (temperatures) of the four elements, earth, air, fire, and water. Earth and water, Thomson said, constituted the solids, while air and fire (heat) were the cause of life and motion. The mainstay of his healing botanical system was the previously mentioned lobelia plant, which he considered a universal remedy which would "increase the internal heat," thus promoting healing. By 1838 he had added and employed over 65 botanical remedies, along with steam baths and medicated enemas. His system was further broken down into an ordered course of therapy, which used steam baths, evacuation with emetics, followed by tonics.¹ This course began with an emetic, which he termed his Number 1. This medication was the universally used lobelia. Later, the patient would be given Thomson's Number 2, which included capsicum, ginger, and cayenne pepper, to restore the internal heat. Thomson's Number 3 was a mixture of eight plants including bayberry, water lily, hemlock and sumac, dispensed as teas and tonics, as was his Number 4. The latter was made from poplar bark, bitter root, balmoney, and Ohio kercuma. These were used "to correct the bile and restore digestion." Thomson's Number 5 was a syrup for dysentery, made from poplar bark, bayberry, peach-meats, sugar, and brandy. By far the most famous of Thomson's remedies was his Number 6, or his "Rheumatic Drops." This included high wines or 4th proof brandy, gum myrrh, and cayenne. Turpentine and occasionally gum camphor were added for external application. He also sold nerve powder as well as cancer plastic. This latter medication was made from red clover, and was processed "to cure cancer, sore lips, and all old sores."

A turning point came in Thomson's life in 1809, when he was prosecuted for murder. He had been accused by a regular practitioner of killing three patients with lobelia. He was acquitted by the testimony of Manasseh Cutler, the botanist, who showed that the plant the prosecution thought was lobelia was, in fact, harmless marsh rosemary. Realizing that he would continue to have problems, especially as he traveled from state to state, if he did not attend to legalities, he obtained in 1813 a patent for "fever medicine." This patent was renewed in 1823 and in 1836. Prior to this time, in 1811, he had already started to advertise his system of medicine. This system and the training in it were marketed and sold to any individual upon request for \$20. Those who bought in became members of the "Friendly Botanic Society." He later started selling these rights through

hired agents. Thomson claimed to have sold about 100,000 of these rights by 1839, while in December, 1833, he had 167 agents in 22 states, the greatest number (41) being in Ohio.

By 1832, Thomson's organizations also included a newspaper, the "Thomsonian Recorder," and boasted a national convention held in December in Columbus, Ohio, one of the earliest national conventions held in the United States. Aside from getting acquainted with fellow Thomsonians, the agenda for this convention included a discussion of medicinal plants, a discussion of the treatment of Asiatic cholera, and, most important for future events, a call for the repeal of licensing legislation. Licensing legislation of that time, which was promulgated by regular physicians, was held by the Thomsonians, and other people practicing outside the licensing laws, to be discriminatory. A second convention with similar ends was held in Pittsburgh in 1833, and then at Baltimore in 1834, and Richmond in 1835. In 1838 Thomson recommended disbanding the convention because of irreconcilable differences. This last was held in Philadelphia. These differences revolved around Alva Curtis, a Thomsonian, who in 1838 formed the "Independent Thomsonian Botanic Society." Thomson and the other purists formed the "United States Thomsonian Society." This dispute involved Curtis's desire to start a national Thomsonian infirmary along with a Thomsonian medical school. Thomson was adamant in his refusal. Curtis did, in fact, found the Botanico-Medical School and Infirmary in Columbus, Ohio, and obtained a charter in 1839 from the Ohio Legislature to the Literary and Botanico-Medical Institute of Ohio.

Even though there was a split in the ranks, it did not destroy the organization totally. In the mid-1840s, the vast majority of laws regulating the practice of medicine had been repealed, including those of New York State, or had been so emasculated that they were largely ignored. This was done primarily at the behest and agitation of Thomsonian physicians. The regular medical profession was at that period held in extremely low public regard. Since medicine did not have a firm footing (the etiology of disease was still obscure), and diseases were not being cured, as was being pointed out during the cholera epidemics, the average individual felt that he should be able to choose his physician, even if he wasn't one of the regular brand. This general dissatisfaction with medicine, coupled with the high fees charged by the regular profession, laced with the feeling of Jacksonian democracy of the period, were the ingredients that eventually did away with licensing.² Samuel

SAMUEL THOMSON — BONNABEAU

Thomson died in 1843, and his organization, as he knew it, dispersed in the late 1850s.

Thomson's strength had been society's distress with the regular medical profession, while his vital

weakness had been the fact that his medical system was not based on anything that resembled solid fact. His system splintered and survived in other forms of eclectic, reformed, or physiomedical medicine.

Footnotes

1. Because of their reliance on steam baths and evacuates, the regular medical profession labeled Thomsonians "steam and puke doctors."
2. The low point came in 1851 when 15 states repealed their already existing licensing laws and the Georgia legislature appropriated \$5,000 for a Botanic Medical School

The overall picture worsens if it is borne in mind that eight states never had any licensing laws enacted at all. The various forms of medical practice were thought of and treated as were the various religions of the time.

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Letters to the Editor

Pintos, Profits, and Patients — and Tylenol

My first thought on reading Dr. Bell's article entitled "Pintos, Profits, and Patients"* was a recollection of my college statistics. A fundamental of statistics is that the confidence one may assume about a set of observations is directly related to the number of observations. In fact, the mathematical expression for confidence has a term $(N-1)$ where N is the number of observations. Thus, one observation derives a confidence factor of zero. The equation points out the risk in assuming that Ford's Pinto decision is typical and relevant to profits role in business. Upon further reflection, however, it is apparent that the Pinto incident is a good example. In the Pinto example the court established that a conscious decision had been made to ignore an obvious safety hazard in the location of the gas tank, which ultimately led to many deaths. It is a good example because it was a bad business decision, not just from an ethical point of view but from a business perspective. The total cost of that decision was much more than the court award. Pinto, as a product, vanished and Ford's loss of market position must in part be attributed to the resultant loss of consumer confidence. The Pinto example demonstrates that if business focuses only on short term profits it will end up in serious trouble — even if it is the Ford Motor Company.

The thesis that "the business ethic . . . is that everything is done to maximize profit without consideration of other factors" is fundamentally wrong. It is no more correct to say that the purpose of business is profit than to say the purpose of life is to eat. Both are necessary but not sufficient conditions for existence. The business values of today's successful organizations can be seen by reading the best selling book in America for 1983 and the best selling business book of all time, Tom Peters and Bob Waterman's "In Search of Excellence." They profile the characteristics of the successful corporations in the United States into eight points: a bias towards action, staying close to the customers' needs and desires, maintaining entrepreneurship, focusing on improving their people, managing the organization based on basic values and beliefs, sticking to one's knitting, keeping organizational forms simple, and having tight rules on important things and flexibility on the rest. Please note that the word profit never showed up, though the concept of staying close to the customer and meeting its needs is pervasive in the book. Does cost have to conflict with quality? McDonald's doesn't think so. Quality of their product is one of the tight rules they insist on while being very competitive in the marketplace. One quote from the book shows the relationship of financial objectives to business success, "we found that companies whose only articulated goals are financial, did not do nearly as well financially as companies that had broader sets of values." In short, business success occurs from satisfying a customer's need in a cost effective manner. Profits occur when one is able to meet a need that is worth more to the customer than the cost of providing the need. Profit is necessary because it is, in essence, the rent the business pays on the resources it uses.

Another perspective of business ethics can be seen in the January 9, 1984, *Fortune* article, "America's Most Admired Corporations." The article lists the following eight attributes of reputation: quality of management, quality of products or services, innovativeness, long-term investment value, financial soundness, community and environmental responsibility, ability to attract, develop and keep talented people and use of corporate assets. Note only two of these attributes are directly related to profit.

I don't think it coincidental that the three firms with the lowest quality ratings were all classed in the ten least admired corporations. The article also points out that the ranking of

*President's Letter, November, 1983 issue *Minnesota Medicine*, page 663.

LETTERS TO THE EDITOR

Johnson and Johnson did not suffer despite the Tylenol deaths because of its rapid voluntary withdrawal of the product despite a profit cost of \$100 million. This is an example of a good business decision despite its obvious impact on short-term profits.

I must also argue against a second premise in Dr. Bell's article, i.e., that medical services are or will become a commodity. A commodity is generally defined as a product or service in which the customer considers price as the sole or dominant consideration for product selection. This concept works well in those areas where quality can easily be defined and measured, such as basic metals, precious metals, raw materials, etc. The bulk of products and services sold today are to some extent, "brands," where other factors such as quality, availability (I used to go to a physician that never came within an hour of seeing me at the appointment time), personal attention, etc. weigh in the customer's purchase decision together with price. Certainly, quality will always weigh in the customer's decision in the purchase of medical services. It is a safe prediction that provider organizations which believe that they can sell on price alone without regard to quality are in for a rude awakening.

Inherent in this issue is the concept that professionals cannot maintain their ethical standards if they must consider cost. To the contrary, cost is one parameter that lawyers, architects, and engineers must consider. This is not to say that cost cannot conflict with other standards, but service to its customer includes the management of those conflicts for the customer's best interest which includes the economic interest. From an engineer's point of view life would be a lot easier if we could design without consideration of cost. To some extent Bell Telephone Laboratories used to be able to do that, much to the envy of those of us working in the competitive, or as we like to call it, the real world. The deregulated Bell Telephone Laboratories are about to find out how good their "cost" skills are in a competitive world.

In summary, the examples of bad business judgments are no more valid proofs of the principles of business practice than examples of malpractice are proofs of principles of medical practice. It is well established that businesses that succeed over time are those that do the best job of meeting the full set of customer needs including economics. The cost of medical services has risen to where the economic considerations must be a significant part of the professional's decision process for providing care. Economics can conflict with quality, and the management of that conflict is part of the professional's task. Economics makes the problem more difficult. Welcome to the real world!

Robert Rynearson
Vice President, Honeywell, Inc.

Vertical Covers for Minnesota Medicine

We have tried the vertical cover format, and it has been very well accepted. The Medical Association has suggested that we continue this format. If you have any vertical 35 mm slides of fall and winter scenes, please send them to me.

Bruce Nydahl, M.D.
Cover Editor

Spring X-ray Workshops Cancelled

No workshops will be offered this spring. New curriculum is now being written to offer a better educational experience to those taking x-rays in physician's offices. Look for future announcements of the X-Ray Operator Workshops for Safe, Practical Radiography.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

May, 1984

-12 Minnesota Medical Association, Annual Meeting; MMA; Radisson South Hotel, Bloomington; CONTACT: Eugenia C. Kassir, Director, Continuing Medical Education & Meeting Services, 2221 University Avenue S.E., Minneapolis, MN 55414; 612/378-1875.

0-12 42nd Annual Course in Allergy and Clinical Immunology; CME Office U of M Medical School; Mayo Memorial Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office, Box 193 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

0 Management of Low Back Pain; Abbott Northwestern Hospital, Minneapolis; CONTACT: Education Dept., Abbott Northwestern Hospital, Mpls., MN 55407 612/874-4300

0 Medical Chest; St. Joseph's Medical Center; Brainerd, MN; CONTACT: Mark Muesing, M.D., 303 Kingwood, Brainerd, MN; 818/29-3568

1 ENT Primary Care: A Workshop; St. Joseph's Hospital; St. Joseph's Hospital; CONTACT: Dr. Charles Drage, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3180.

4-15 Basic Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189

4-18 MKSAP Review Course; American College of Physicians; Hennepin County Medical Center, Mpls., MN; CONTACT: Dr. Leslie Eve, Hennepin County Medical Center, Mpls., MN 55415; 612/347-2703

7-18 Radiology Update; St. Paul Ramsey Medical Center; The Saint Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

7-19 Topics and Advances in Pediatrics; Office of CME U of M Medical School; Mayo Memorial, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

8-19 Common Problems in Obstetrics/Gynecology; Park Nicollet Medical Foundation; Radisson Inn Plymouth; CONTACT: Elaine Anderson, 927-3703.

0-22 Impact of Modern Perinatal Care on Society — 14th Annual Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, 420 Delaware St. S.E., Mpls., MN 55455; 612/373-5718

1-23 Bone and Soft Tissue Tumors; American Academy of Orthopedic Surgeons; Mayo Clinic, Rochester; CONTACT: 507/284-2085.

22 Gynecologic Oncology Update, Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012

23-25 Current Concepts in Radiation Therapy; Office of CME, U of M Medical School; Mayo Memorial Auditorium; U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME Office U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

May 30 — June 1 Recent Advances in Laboratory Medicine; Office of CME, U of M Medical School; Mayo Memorial Auditorium, U of M Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M Box 293, Mayo Memorial Bldg., 420 Delaware Street S.E., Minneapolis, MN 55455; 612/373-8012.

June 1984

7-8 Clinical Nutrition for Practicing Physicians; St. Paul Ramsey Medical Center; The St. Paul Hotel; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3992.

12, 19 & 20 Basic Life Support (CPR) Instructor Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189

13-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

14-15 Running & Endurance Sports: A Scientific Appraisal; University of MN-Duluth School of Med; Duluth, MN; CONTACT: Jan DeRoche, 2400 Oakland Ave., Duluth, MN 55812, 218/726-7916.

14-15 Dual Disorders: Chemical Dependency & Psychiatric Disorder; Alcohol-Drug Treatment Program, Dept. of Psychiatry, Univ. of MN; L'Hotel Sofitel, Mpls.; CONTACT: Joseph Westermeyer, M.D., Dept. of Psychiatry, U of MN Hosp., Mpls., MN 55455; 612/373-7952

14-16 Management of Pelvic Trauma; American Academy of Orthopaedic Surgeons; AMFAC Hotel, Minneapolis; CONTACT: 312/822-0970.

20-21 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

(June continued)

25-29 Advanced Cardiac Life Support Course; Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

26-27 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

27-29 Real Time Ultrasound in Obstetrics; U of M Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D. Interim Director, CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

22-27 Medical Treatment Update for the Family Physician; North Memorial Medical Center; Plummer's Great Slave Lake Lodge — Canada; CONTACT: Joseph Bocklage, M.D., 608 Oakdale Medical Bldg., Robbinsdale, MN 55422; 612/588-9478.

July 27 — August 13 Summer Sportsmedicine Conference; North Central Medical Conference; Los Angeles, California; CONTACT: Harold Brunn, North Central Medical Conference, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

20-22 The Knee: Current Concepts of Treatment & Techniques; American Academy of Orthopaedic Surgeons, The Kahler Hotel, Rochester, MN; CONTACT: 312/822-0970

20-22 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

August 26-September 1 Transplantation Society Congress; U of MN Medical School, Mpls., MN; CONTACT: Bart Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012

27-28 Basic Life Support Course, Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

September, 1984

2-3 Annual Meeting, MN Orthopedic Society; Winnipeg; CONTACT: Jack M. Bert, M.D., 307 Gallery Medical Bldg., 17 West Exchange St., St. Paul, MN 55102.

10-14 Chest Radiology; CME University of MN Medical School; Willey Hall Auditorium, U of M, Minneapolis; CONTACT: Bart W. Galle, Ph.D., CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, SE, Minneapolis, 55455; 612/373-8012.

14-15 Common Problems in Cardiology; Park Nicollet Medical Foundation; CONTACT: Elaine Anderson, 5000 W. 39th St., Minneapolis, MN 55426; 612/927-3703.

17-19 Triennial International Symposium on Male Sexual Dysfunction; Mayo Clinic/Mayo Foundation, 200 First St. SW, Rochester, MN 55905; CONTACT: William L. Nietz.

20-22 Trauma & Critical Care Seminar; CME U of M; Hennepin County Medical Center, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, U of M CME, Box 293 Mayo Memorial Building, 420 Delaware St. SE, Minneapolis, 55455; 612/373-8012.

21-22 Advanced Trauma Life Support; University of MN-Duluth Medical School; CONTACT: C. L. Barbee, M.D., 1000 E. First St. — Suite 203, Duluth, MN; 218/727-7259.

22 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700 ext. 1117.

28 Problems in Family Practice; The Duluth Clinic, Ltd; Holiday Inn, Duluth; CONTACT: J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805; 218/722-8364.

28 Northwestern Pediatric Society Meeting; Northwestern Pediatric Society; Chanhassen Dinner Theatre, Chanhassen, MN; CONTACT: Fredric Kleinberg, M.D., Dept. of Pediatrics Mayo Clinic, Rochester, MN 55905; 507/284-2922.

October 1984

1 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

4-13 Advance Cardiac Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189.

11-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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(Continued on page 294)

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(Continued from page 293)

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(Continued from page 295)

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INTERNIST ASSOCIATE — Moorhead Medical Center. Fargo-Moorhead has three colleges and excellent schools. Competitive salary. Send C.V. to John Gjevre, M.D., Box 914, Moorhead, MN 56560.

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Annual Subscription — \$18.00. Single copies — \$2.00
Canadian — \$30.00. Foreign — \$30.00.

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President's Letter



What's Right with Medicine!

At this time I wish to commend Don Bell for his excellent editorials and fine leadership he has given our Association this last year.

We hear so much of what's wrong with medicine that I thought it would be appropriate to begin my editorial year with a recap and an update on an earlier piece of that I wrote.

Let me tell you why I am still excited about being a physician . . .

- The excitement of attending at a birth. To witness the mother's suffering turned to a joy, a father's anxiety turned to pride, the miracle of life. To observe the growth of that child from infancy, to teenage, to adulthood, and for older physicians, the delivery of that child's children.

- To work with colleagues of superior skills, knowledge, wisdom, competence, and interests.

- To watch and listen to gifted teachers who share their wisdom with bright and eager young physicians, medical students, and associates.

- To be able to practice medicine in a time of marvelous advances in research both clinical and laboratory — the vaccines, antibiotics, the tools available, the surgical frontiers conquered.

- The satisfaction of solving a difficult diagnostic dilemma, discovering a lesion, the repair or removal of which allows prolongation of a quality life. For me, the challenge of a difficult alcoholic or chemical dependency problem and successful recovery which keeps the family

together, prevents further physical, mental, financial and moral deterioration, and allows the patient to develop an inner peace, love of life and his fellow man.

- Our advocacy of preventative medical measures such as weight reduction, exercise, anti-smoking programs, including our smoke-free society by the year 2000; seat belt and drunk driving legislation, to name but a few, which unfortunately frequently go unheeded.

- The physician's sense of duty and dedication such as spending long and irregular hours with a difficult case.

- The high ethical standards of medicine and physicians.

- Peer review activity donated to assure high quality of care for our patients.

- The competitive drive physicians show to keep up or excel through refresher courses, individual reading, and other forms of continuing medical education, even before it became publicly popular.

- To share the trust and confidence of our patients.

- Having witnessed many politico-medico discussions in organized medicine, I am impressed with the sincere concern expressed by my fellow physicians, not only for the cost and quality of care of his/her patients, but for what is best for society as a whole.

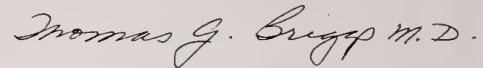
- I am impressed by the democracy of organized medicine.

PRESIDENT'S LETTER

- The privilege of being able to study the human body in medical school and to marvel at the function and repair process of this wonderful creation of God as we proceed through our medical careers, so much of which we understand, so much more that we don't.

- Finally, the kindness, dignity, compassion and understanding most of my associates show

to the living, the troubled, and the dying.
I am proud to be a physician — and have you for a colleague!



Thomas G. Briggs, M.D.
President
Minnesota Medical Association

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October 16-18, 1984. Primary Care: Selected Infectious Diseases. Kauai, Hawaii. Credit hours: A.M.A. 11½ Category 1. Fee: \$225 to August 15, then \$275. Sponsors: Health Science Seminars and Extended Programs in Medical Education, University of California, San Francisco. Contact: Cynthia Vaughan, P.O. Box 22023, San Francisco, CA 94122; or call (415) 861-2713.

Five Twin Cities Physicians Receive Awards

Five Twin Cities physicians received Presidents Awards at the Annual Meeting of the Minnesota Medical Association.

John J. Galligan, M.D., St. Paul, for serving on and chairing the MMA Resource Group on Maternal and Child Health, for representing the MMA on child health issues and for actively serving on numerous community child health projects for 24 years;

Neal Gault, Jr., M.D., St. Paul, for becoming a world leader in medical education as Dean of the University of Minnesota Medical School since 1972 and for serving on numerous MMA committees;

Warren R. Lawson, M.D., Edina, for serving public health in Minnesota since 1942, for serving as Commissioner of Health, State of Minnesota and for chairing the MMA Resource Group on Environmental and Industrial Health;

Charles E. Lindemann, M.D., Minneapolis, for serving the medical needs of the Southeast Asian refugees by chairing the MMA Ad Hoc Committee on Indochinese Refugees and the Commissioner of Public Welfare's Advisory Committee on Southeast Asian Refugees and for serving the MMA as a delegate, a vice president and on numerous committees;

Robert W. Reif, M.D., St. Paul, for contributions to medical education, for serving Minnesota in the House of Representatives from District 53B since 1978 and for serving on numerous MMA Committees.

Physician in the News

William E. Jacott, M.D., a family physician with the Duluth Clinic in Duluth, Minnesota, was elected vice-president of the Federation of State Medical Boards at the Federation's recent meeting in San Antonio, Texas.

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Editor's Notebook

Corporate Transformation of Medicine in Minnesota: No Miracles Among Friends: Competitive Changes in Wake of HMO Growth

Fifth in a Series
Second of Two Parts

"Perhaps the single most compelling force behind this movement is the mounting perception among large public and private purchasers that fee-for-service medicine, left unfettered by limitations on the patient's choice of physician and by other mechanisms intended to promote cost consciousness, simply lacks the discipline necessary to reduce the volume of services delivered, particularly inpatient care, and thereby check the growth of expenditures."

John K. Iglehart, 'HMOs (For-Profit and Not-For-Profit) on the Move,' *NEW ENGLAND JOURNAL OF MEDICINE*, 310:1203-1208, 1984

What Happens When . . . (Continued)

NEW ORLEANS — Lastly, what happens to practitioners when Medicare patients desert them for HMOs? This desertion may be the toughest blow of all. As physicians, we have long comforted ourselves with these beliefs: (1) older patients who have been with us for a long time will not switch physicians for price; and (2) HMOs cannot economically handle older or sicker patients.

Yet by the close of 1983, Twin Cities HMOs had already harvested 18 percent of the Medicare market. And now, because a few HMOs initially succeeded with Medicare patients, all major Twin Cities HMOs are joining in the marketing war for Seniors' business. Looking back, this success should have been more apparent because of: (1) the exploding cost of premiums for commercial indemnity insurance for Seniors; (2) the obvious marketing and financial success of SHARE with Seniors; (3) a change in the federal law on January 1, 1984 requiring HMOs to offer coverage to all senior citizens who asked; and (4) the recognition by HMOs that if you can screen out 10 percent of elderly who consume 80 percent of resources and receive 95 percent of per capita Medicare payment for the rest, you can be immensely profitable. Whatever the reasons, the HMO Medicare market is exploding in the Twin Cities, as evidenced by these figures:

HMO Growth in Twin Cities Medicare Market

	1980	1981	1982	1983	Present
HMO-Minnesota	0	461	640	2776	4100
MedCenters	0	1376	3222	4874	6853
SHARE	722	5825	12514	18977	26000
Physicians' Health Plan	0	888	1553	4482	7500
Group Health*					
Senior Health Plan†					
Total	722	8534	17629	31109	44552
Percent Market Share	less 1%	5%	10%	18%	25%

*Began April, 1984

†To begin sometime in Spring of 1984

Source: Minnesota Department of Health

*Based on presentation before Blue Cross and Blue Shield's National Alternatives Delivery Systems Conference, Royal Senestra Hotel, April 8, 1984.

And so, in four short years, HMO penetration of the Medicare Market has gone from 0 to roughly 25 percent. In the Twin Cities at least, the learning curve is now getting steeper earlier. At an anticipated 40 percent growth rate, 50 percent market share of Twin Cities Seniors suddenly seems possible.

How Do You React to HMO Growth?

The answer is easy: you change. And you may have to change fast to adapt to the self-disciplining forces of the market, to accommodate to new realities, and to survive. At their current growth rate of 22 percent per annum, Twin Cities HMOs have a doubling time of 3½ years. Given the current rate, these HMOs could double from 33 to 66 percent of the market by 1988. The final estimated market share is strictly speculation because the market saturation point for HMOs has never been tested.

As I've indicated, this change is painful. Perhaps not as painful as elsewhere, since 67.3 percent of Minnesota physicians are already in group practice. Indeed, some Twin Cities physicians look at HMOs as merely refined group practices. But for most of us, the corporate transformation of Medicine has been an emotional roller coaster.

We have gone through the grieving phases of denial, anger, depression, bargaining, and acceptance. You'll hear symptoms of these phases expressed in any hospital staff room: "The economy will swing back, and patients will start flooding back." (denial); "Why can't those damn HMOs let well enough alone? What was wrong with the old ways?" (anger); "How many of us do you think will still be practicing in five years? Damn few." (depression); "Maybe we ought to get together with the hospital and form a PPO." (bargaining); "I'm not going to fight it anymore. I'm going to contract to see HMO patients, or join a multispecialty group. I'll have less money, but at least I'll have more time off." (acceptance.)

A Word about Feeling

Just a word if I may, about the feelings of some practicing physicians towards HMOs. I do so because physician readers of these editorials who are HMO critics tell me I haven't made their objections clear.

Many of these physicians feel HMOs mislead patients because: (1) HMOs use physician-extenders rather than physicians themselves to handle phone calls and routine visits; (2) this use of nonphysicians may result in misinterpretation of serious problems, e.g., an evolving myocardial infarct or an acute appendicitis; (3) HMOs exclude such common cost-consuming illnesses as alcoholism or psychiatric illnesses; (4) HMOs stint on services when patients become ill; and (5) HMOs, non-profit or for-profit, may be disguised schemes to make money for their founders, managers, or investors. Indeed, a few physicians regard HMOs as a form of fee-splitting because HMO physicians receive bonuses for not performing services. Reality — steady growth of HMOs in the Twin Cities over the last ten years; acceptance by third party payors, government, employers, and patients; and the inescapable fact that 75 percent of Twin Cities physicians are associated with an HMO in one way or another — has made many of these feelings irrelevant. In the Twin Cities, HMOs have entered the mainstream of medical practice. And there, as far as I can see, they will stay.

At this point, I might add HMO physicians have their own feelings. They say emotions expressed by physician critics have not stood up to impartial scrutiny. Besides, they add, HMO physicians enjoy practicing without worrying about what to charge patients, without being concerned whether patients are adequately covered by insurance, without being burdened with business duties, and without wasting mental energy on how to market their services. They feel they can practice high quality medicine in the HMO environment. As one such physician confided to me: "Good doctors are good doctors, wherever they practice." Finally, HMO physicians point to patient satisfaction with HMOs, which compares favorably with satisfaction with traditional practice.

The Need for Surplus Money

What physicians often do not understand is that HMOs, profit or non-profit, need a surplus of money to grow. This need is why Physicians' Health Plan tried to use management company stock to raise capital. This need is why four of the largest non-profit HMOs — Group Health of Puget Sound, Group Health of St. Paul, Harvard Community Health Plan, and Health Insurance Plan of Greater New York — are forming a for-profit corporation that would acquire and develop HMOs in regions other than where they operate. Without outside capital to finance growth, HMOs are driven by the incentive to provide fewer, rather than more services. How this incentive will ultimately impact on quality of care, no one knows. But critics say HMOs do not properly inform patients that the HMO profits by under-offering services.

As physicians make the transformation from a predominately fee-for-service practice to a predominately prepaid practice, their roles and those of hospitals will change. In a fee-for-service setting, physicians advocate care for the patient; in an HMO setting the physician's job is to allocate care. There is a difference in these roles, as explained by David Mechanic, university professor and dean of the faculty of arts and sciences at Rutgers University (Mechanic, D.: *The Transformation of Health Providers*, Health Affairs, 3:65-72, 1984):

“Current effort to control the escalation of costs often involves modification of two basic conditions of traditional trusting doctor-patient relationships.

“First, they often seek to lock in care to a particular category of providers who become gatekeepers to more specialized and expensive services.

“Second, they modify the definition of the provider's role as sole agent of the patient's welfare to a role balancing the patient's wants and needs against aggregate population and a fixed budget. The physician or hospital's role, thus, is transformed from advocating to allocating.

“Such transformations are inherent in capitation rate regulation and diagnosis-related group methodologies.”

Fundamentals of Staying in Practice

In any event, once you have gone through the emotional phases that accompany the passing of an old way of life and the acceptance of a new way, the thought dawns that the fundamentals of staying in practice are the same as those of staying in business — innovation and marketing. You learn these fundamentals apply in a profession with too many doctors and too few patients. You learn the patient market is price sensitive, and you learn its forces move inexorably, impersonally, and pervasively to punish the inefficient, the insensitive, and the slow. You learn you have no regulatory authorities to turn to, either for protest or protection.

How Do You Change?

But given your professional background, how can you change? You can do the obvious — extend your hours, make housecalls, instruct your aides in the common courtesies, remind your patients of followup visits, put an ad in the local newspaper, or even start an office newsletter.

But how can you adapt to a way of life that asks you to offer fewer services, when you've been trained to give everything Medicine has to offer? You can study your work style; you can rethink what you're doing and how you're doing it; you can ask who your potential patients are; you can investigate what they want; you can improve your services; you can market your services. If you find all of this too radical, you can join or affiliate with an organization that will do these things for you. Perhaps that is why Twin Cities physicians are doing what they are now doing; joining multispecialty groups in record numbers, working for HMOs, coalescing smaller groups to form larger groups, and joining hospitals in such joint ventures such as DRG management groups, medical office

buildings, outpatient diagnostic facilities, and investments in high technology equipment.

Finally, as a private practitioner, you can learn dealing with HMOs has its positive side. Many patients remain with their private physician after leaving the fee-for-service section to enter such HMOs as Physicians' Health Plan, HMO Minnesota, or even SHARE. And many entering these plans become a growing part of the patient base of private groups. Indeed, HMO patients often are the fastest growing portion of the patient population in private offices. Practicing physicians, in short, are accommodating to the new realities.

Hospital Administrator

If you happen to be a hospital administrator, you go through the same grieving as the physician. After all, hospital administrators share similar values to doctors. Like physicians, you cut your teeth on the concepts of fee-for-service, physician choice, and cost reimbursement. Like physicians, you moan the loss of old values, point out HMOs are rationing care, and question what HMOs will do for the poor, the sick, and the old.

Still, you begin to make changes. You have to. Your organization may change ownership or control, or you may try to integrate your institution horizontally or vertically, diversify, restructure with holding companies and for-profit subsidiaries. And you can always merge, consolidate, or gain control of health care services outside your walls. You can hire a marketing man, preferably an experienced one from a deregulated industry — such as telecommunications, banking, or airlines. You can reduce your costs of operation, improve productivity, enhance revenues, divest yourself of “unprofitable” lines of service, introduce case mix management, shift from patient orientation to a product line approach, and emphasize longterm planning and financial systems. Finally, you can announce you're making the transformation from an acute care hospital to a diversified health care corporation.

Academicians

If you're in academic medicine, you may be slow to respond. For good reason, too. You have taken seriously your missions of teaching, research, and knowledge transfer. Somehow, you feel, you should be removed from the vulgarities of the marketplace. After all, you have problems of education and training, costs of clinical research, greater severities of illnesses, burdens of indigent care, and you have young physicians ordering too many tests, doing too many procedures, and otherwise acting in an heroic but uneconomic fashion. When you finally decide to move to cut your losses, you make efforts to cut your costs; you think of forming separate non-profit corporations; you set up a private practice plan to supplement your research funds and your income; you compete for high-technology product lines; you contract with nursing homes and home care agencies; you persuade public policymakers that academic institutions are special and need more money to retain your excellence. If all else fails, you can consider negotiating or contracting with HMOs.

Blues Executives

If you're an executive in a Blue Cross and Blue Shield Plan, and your traditional markets are eroding, you act to make your Plan competitive. In fact, you make the most significant changes your organization has made in 25 years. You decide to no longer remain at the mercy of the system. You do things that would have been unthinkable six months or even one year before. You set up a program called AWARE (rhymes with SHARE). You ask preferred hospitals to accept preset per-day reimbursements. You ask physicians to join even though they have to accept preadmission authorization to refer only to participating physicians, to accept utilization controls, and to be reimbursed at the 85th percentile (those who don't join are reimbursed at the 55th percentile).

You entrust peer review for appropriateness of hospital admissions, quality of care, and length of stay to a Foundation for Health Care Evaluation. You ask for self-discipline, and

EDITOR'S NOTEBOOK

you encourage clinicians to be conservative in their economic behavior. In short, you demand your doctors act very much like they belonged to an HMO.

You don't stop there. You promote your own HMO with a vigorous marketing program; you enter the Medicare HMO market; you push down your inpatient day ratio below most of your competitors; you improve your cost controls; you work harder on your service and contract relations; and you seek to tighten your administrative programs. In other words, you batten down the hatches and plunge full-speed ahead. But you keep a close watch on the competitive seas around you. You monitor figures of your HMO competitors. Here they are for the end of 1983.

Twin Cities HMOs	12/82	12/83	Percent Change
Coordinated Health Care	6,465	10,830	+ 67
Group Health Plan	195,011	202,154	+ 3
HMO-Minnesota	41,170	51,000	+ 24
MedCenters	136,268	167,075	+ 23
Physicians' Health Plan	99,748	128,770	+ 28
SHARE Health Plan	57,071	77,900	+ 37

Source: Minnesota Department of Health

And like any good businessman, you keep your nose in the air, your finger to the wind, and your ear to the ground. You learn two new HMOs are afoot — the Senior Health Plan and a possible Hennepin County HMO for Medicaid patients. You make other moves to strengthen your hand. You become a leader in cost containment and financing alternatives; you create AWARE benefits for those with healthy lifestyles; you beef up all aspects of your marketing; you publish motivational and informational material on wellness; you offer group life insurance for the first time, and set into the cafeteria plan market.

You support Blue Cross and Blue Shield's national shift from an defensive to an offensive strategy in HMO development. You applaud the Blues' HMO membership increase by 23 percent to 1.3 million members in 1983. With the national organization's plan to launch its marketing campaign for *HMO-USA*, you realize the Blues may begin to overcome their marketing schizophrenia, i.e. having the same sales force selling indemnity health insurance and HMO plans. Change is in the air, and you are becoming deeply involved in innovative arrangements that will change the entire landscape of paying for medical care.

Something to Say

But I digress. I violate the spirit of my favorite medical author, Doctor John Shaw Billings, who founded the INDEX MEDICUS. Billings had this to say about medical writing: "First, have something to say, 2nd stop when you have said it, and finally give it an accurate title."

What I come to New Orleans to say is this: 1) the Twin Cities of Minneapolis and St. Paul are the Pressure Cookers of Competitive Medicine in America; and 2) the heat of Competitive Medicine has generated such a head of steam there, that it will likely boil over to engulf other major American cities.

Ironically, the only major city of over one million without an operational HMO is New Orleans. But in the other cities, many plying the HMO trade learned their skills in the Twin Cities. Be forewarned — once HMOs are on the exponential slope of the learning curve, events happen quickly. As the Chief Executive Officer of Blue Cross and Blue Shield of Minnesota told me the other day, "I've seen more things happen, with greater speed, in the last two years than I've seen in the previous twenty."

HMO enrollment across the United States increased in 1983 by 15 percent; and by June 1983, the annual growth percentage may reach 18 percent. By 1993 HMO watchers, including those at Touche & Ross & Company, predict 50 million enrollees.

EDITOR'S NOTEBOOK

This figure may be a fantasy in the minds of HMO optimists. But think about this. If you extrapolate the Twin Cities current HMO market penetration to the current U.S. population of 235 million, 82 million Americans would now belong to HMOs. This is not likely to happen, because each city and region in this country has its own circumstances, its own problem solving styles, its own approach to introducing competitive plans, its own resistance to change, and its own ultimate level of HMO market saturation.

Rapidity of Change

But change may come much more rapidly elsewhere than anybody expects. If you're still leery, I ask you to review these increases in HMO enrollment in these major cities in 1983, many of which were formerly considered resistant to change in their alternative delivery systems:

Boston	50 percent
Miami	46 percent
Chicago	42 percent
Detroit	29 percent
Twin Cities	22 percent

These figures are deceiving because these cities started from a much lower enrollment base than the Twin Cities.

But also keep in mind that by 1982, other cities, all in the West, had comparable HMO market penetration to the Twin Cities — San Francisco 33.7 percent, Los Angeles 25.1 percent, and 23.4 percent in Portland, Oregon. In five states — California, Minnesota, Wisconsin, Oregon, and Washington — HMO market share now exceeds 10 percent. If trends are set in the West, as many believe, the rest of the U.S. is in for increased HMO enrollments.

Whatever Happens

Whatever happens, and I have only the Twin Cities HMO movement to judge from, I predict practice will never be precisely the way it was for traditional practitioners of Medicine anywhere. The surplus of doctors, the excess of hospital beds, and the price sensitivity of powerful third party payors — be they government officials, employers, or commercial insurers — will see to that.



Academy of Ophthalmology & Oto-laryngology

Newly elected officers for May 1984 through May, 1985, are:

James C. Trautmann, M.D. (Ophthalmology), President
George Adams, M.D. (Oto-laryngology), President-Elect
Robert D. Letson, M.D., Vice President
Kent S. Wilson, M.D., Secretary/Treasurer

Council Members:

Joseph H. Leek, M.D., Duluth
William J. Slack, M.D., Duluth
Thomas Christiansen, M.D., Minneapolis
Richard Carroll, M.D., Minneapolis
Martin B. Kaplan, M.D., Edina
Bruce B. Pearson, M.D., Rochester
Executive Secretary — James K. Sager
Secretary — Betty L. Schmid

MMA Distinguished Service Award



Dr. Robert T. Kelly accepting the MMA Distinguished Service Award. (Left to right: Dr. Donald C. Bell, president; Dr. Delwin Ohrt, chairman of the Board of Trustees, Dr. Kelly, and Mrs. Kelly.)

Robert T. Kelly, M.D., a Grand Rapids family physician since 1952, was presented the Minnesota Medical Association's Distinguished Service Award at the MMA Annual Meeting during the annual banquet at the Radisson South Hotel in May.

Dr. Kelly's long record of service to patients, community, and to medicine were cited at the awards ceremony. He has served as president of the Itasca Memorial Hospital medical staff, the Range Medical Society, the Minnesota Medical Association and the North Central Medical Conference.

A leader in the American Medical Association, Dr. Kelly served as chairman of the AMA Council on Medical Service, as a Delegate from Minnesota to the AMA House of Delegates and as chairman of the Committees on PSRO and Practice Evaluation.

Cover Photo

"Cascade River Falls"

Dr. Bruce Nydahl, cover editor of MINNESOTA MEDICINE, took the cover photograph one dark drizzly day of the Cascade River Falls, which are along the North Shore. He used a Nikon camera on a tripod with a 1/sec. exposure.

Dr. Nydahl is an internist practicing in Minneapolis and a clinical assistant professor at the University of Minnesota.

He loves the outdoors and is an avid fisherman and hunter.

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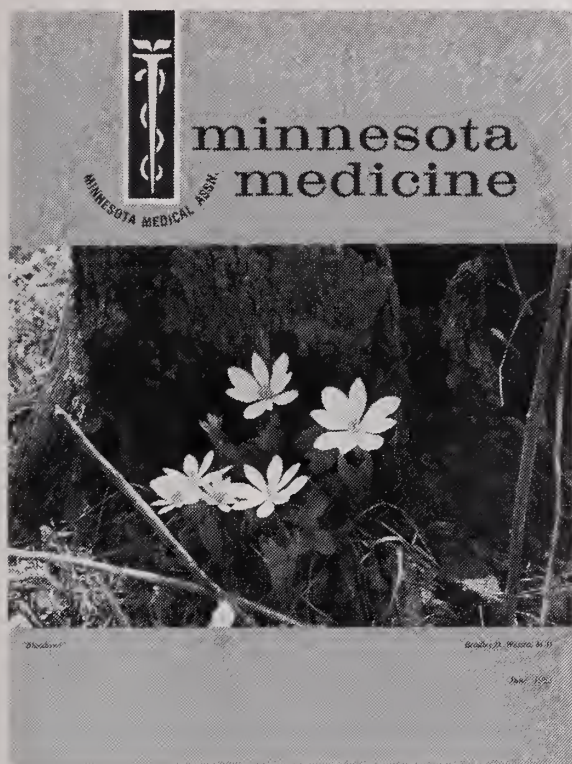
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MINNESOTA MEDICINE's Best of the Year

Each Spring the Board of Editors announces its choices for the best scientific/original article and best cover for the previous year. The winners for 1984 are:

Outstanding Cover Published in 1983



Bradley D. Westra, M.D. — "Bloodroot" — June issue

Dr. Westra is a family practitioner practicing in Spring Valley, Minnesota. Educated at the U of M, interned at North Memorial Medical Center.

He was born in Austin, Minnesota.

The Bloodroot is an early spring wild flower of the moist rich woodland areas. It opens in full sun and closes at night. The Indians used the red juice from the underground stem for dye and war paint. It was also regarded by the Indians for its medicinal properties.

Outstanding Manuscript Published in 1983

Survival after Valve Replacement Surgery

CHARLES R. PETERSON, M.D.,* and H. K. HELSETH, M.D.*

Two-hundred eighty-two consecutive patients referred for cardiac valve replacement had periodic follow-up surveys to determine survival and late post-operative complications. Five year survival was 76% for all patients; 84% in patients without coronary artery disease; 42% in patients with coronary artery disease. The most common cause of late death was heart failure (19 of 43 patients) and 68% of these patients had coronary artery disease. Twenty-nine patients had significant thrombo-embolic complications that caused or likely contributed to death in 8 patients. Three patients died of bacterial endocarditis. The factors with the greatest adverse effect on survival were myocardial failure and associated coronary artery disease. The incidence of endocarditis and coagulation complications was high enough, however, to emphasize the need for careful follow-up care.

IN THE TWO decades since routine cardiac valve replacement surgery became available, surgical techniques have improved and there has been the introduction of new types of valves and coronary artery bypass. In addition, most centers have seen a decline in the number of patients with rheumatic valvular disease and an increase in the proportion of patients with valve pathology due to connective tissue disorders and ischemic heart disease.

These changes in cardiac valve surgery make it important to periodically review the results. This study reviews the results of 282 consecutive patients referred for valve replacement over a 10-year period from 1971 to 1981.

Patients and Methods

From 1971 through 1980, 282 patients evaluated by the Cardiology Section of the St. Louis Park Medical Center were referred to our surgical team for cardiac valve replacement surgery. To obtain follow-up morbidity and mortality information, patients who were not examined regularly had telephone and/or mailed questionnaire surveys in 1976, 1978, and 1981. The study group consisted of 163 men (age range 15 to 82) and 119 women (age range from 18 to 84). The mean age of the men was 54.7 years and the mean age of the women was 56.8 years. This follow-up study did not include patients referred for valve replacement from Hennepin County Medical Center.

Patients who had elective surgery had hemo-

dynamic and angiographic studies and most patients over 40 years of age also had selective coronary arteriographic studies. The pathology and apparent etiology of the valvular abnormality was determined at the time of surgery and the incidence of coronary artery disease (CAD) was determined on the basis of coronary arteriographic findings. Operative information tabulated for this study included the type of valve used for replacement, associated operative procedures on the aorta and coronary arteries, and the number of left ventricular aneurysmectomies.

Primary emphasis in follow-up questions was on thrombo-embolic and bleeding complications since most patients were receiving anticoagulant therapy with Coumadin. In addition, attempts were made to determine as precisely as possible the cause of all late deaths.

Cardio-thoracic (CT) ratios were calculated by dividing the widest transverse diameter of the heart by the widest transverse diameter of the chest at the inner rib margin on a six-foot posterior anterior chest roentgenogram. The mean time interval after surgery that postoperative CT ratios were measured was 11.5 months (4 months to 21 months).

Survival calculations were done by the life table method.¹ The incidence of thrombo-embolic and bleeding complications was calculated per 100 patient-years (or percent per year) of follow-up. There were 931 patient-years follow-up for the entire study group.

Results

Pathology and Pathophysiology

The etiology of the valvular pathology and the

768

MINNESOTA MEDICINE

Charles R. Peterson, M.D. and H. K. Helseth, M.D. — "Survival after Valve Replacement Surgery" December issue

Charles R. Peterson, M.D.

Cardiologist, Park-Nicollet Medical Center. Born at Heron Lake, Minnesota, and a graduate of the U of MN Medical School. Postgraduate work in Cardiology at the University of Oregon.

In 1978, Dr. Peterson won the outstanding manuscript award for his paper "Prognostic Significance of Chest Pain" published in the May, 1977 issue of MINNESOTA MEDICINE.

Hovald K. Helseth, Jr., M.D.

Cardiovascular surgeon, Hennepin County Medical Center and Park-Nicollet Medical Center, Minneapolis. Born in Litchville, North Dakota, and a graduate of the University of Minnesota Medical School. Postgraduate work at Hennepin County General Hospital and the University of Minnesota.

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Fifty Years of Faithful Service

The Minnesota Medical Association annually recognizes its members who have given 50 years of service to the practice of medicine.

Thirty-four outstanding senior physicians were honored by their colleagues and friends as they were received into the distinguished Fifty Club of the Association at the MMA Annual Banquet in May.

A. Frank Adair, Jr., M.D. — St. Paul
David P. Anderson, Jr., M.D. — Bloomington
Archie H. Baggenstoss, M.D. — Rochester
Lowell Barr, M.D. — Garfield, Kansas
Harvey O. Beek, M.D. — St. Paul
William R. Blomberg, M.D. — Arden Hills
George Boody, Jr., M.D. — St. Paul
Harold F. Buchstein, M.D. — Minneapolis
George F. Cardle, M.D. — Brainerd
Theodore J. Catlin, M.D. — Buffalo
Walter D. Coddon, M.D. — Sarasota, Florida
William D. Coventry, M.D. — Duluth
Victor W. Doman, M.D. — Lakefield
John B. Erich, M.D. — Rochester
Delmar R. Gillespie, M.D. — St. Paul
Alvin M. Jensen, M.D. — Bloomington
Douglas L. Johnson, M.D. — Brainerd
William R. Kostick, M.D. — New Hope
Robert H. LaBree, Sr., M.D. — Atlantis, Florida
Edwin T. Maitland, M.D. — Jackson
Wallace A. Merritt, M.D. — Rochester
Donald E. Nealy, M.D. — Adrian
Walter S. Neff, M.D. — Virginia
George H. Olds, M.D. — New Richland
George E. Penn, M.D. — Mankato
Harold O. Peterson, M.D. — Roseville
Sidney S. Scherling, M.D. — Minneapolis
W. Robert Schmidt, M.D. — Minneapolis
John D. Silver, M.D. — Minneapolis
Thorsten Smith, M.D. — Edina
Maurice L. Straus, M.D. — St. Paul
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Leukemia Progress 1984

SIGNIFICANT STRIDES in basic and clinical research continue to provide dramatic advances in various aspects of leukemia and the related diseases — lymphomas and multiple myeloma. These issues were the focus of "LEUKEMIA PROGRESS 1984", a symposium sponsored by the Leukemia Society of America, Inc., Minnesota Chapter, the Section of Hematology, University of Minnesota, and the Mayo Foundation.

This continuing medical education program was structured to provide physicians and allied health professionals with a comprehensive orientation to the following: (1) Current changing concepts in diagnosis, treatment, and support of patients with leukemia. (2) The extent of complications of the disease and therapy. (3) The vital role of the nursing team in patient care and the problems of "coping". (4) The prospective outlook.

The Minnesota division of the Leukemia Society was initiated in September 1982 as the 57th Chapter. The goals of the Society — Education, Patient Aid, and Research — coincide dynamically with the needs of Minnesotans, and underline the commitment to excellence demonstrated by the state's researchers and health care professionals.

Among the educational objectives, this conference was the inaugural of annual symposia to be co-sponsored by other medical specialties. Currently, the Society's patient aid program involves the contribution of \$750 per year to over 160 patients in Minnesota and North and South Dakota. Furthermore, it is significant that approximately \$1,000,000 in grants had been awarded for research to the University of Minnesota and the Mayo Foundation prior to the official formation of the Minnesota Chapter.

MINNESOTA MEDICINE has graciously agreed to publishing each month the proceedings of the symposium. This provides a unique opportunity to reach

and enlighten a broader network of the allied health community. In this and subsequent issues, a diverse collection of questions regarding the current status of leukemia progress will be addressed:

Do chromosome studies give clues to cause(s) of leukemia?

Is there a relationship between morphologic class of leukemia and prognosis?

When should treatment begin — at diagnosis, or at manifestation of major symptoms?

What new drugs are being used to treat leukemia?

Are infections preventable in leukemia patients?

What are the current obstacles in bone marrow transplantation?

How can patients, physicians, nursing staff, and other allied health professionals work together to meet the challenges of today's needs?

For childhood ALL, what primary long-term effects are being recognized?

What strategies can assist patients, families, and professionals to cope psychologically with leukemia?

What supportive groups are available to families with leukemic relatives?

What are the responsibilities of the community and Blood Bank for providing services to leukemic patients?

Is a cure for leukemia a realistic goal?

Toni N. Mariani, Ph.D.
Associate Professor
Department of Laboratory
Medicine and Pathology
University of Minnesota
and
Chairman, Medical Advisory Committee
Leukemia Society of America, Inc.
Minnesota Chapter
Minneapolis, Minnesota

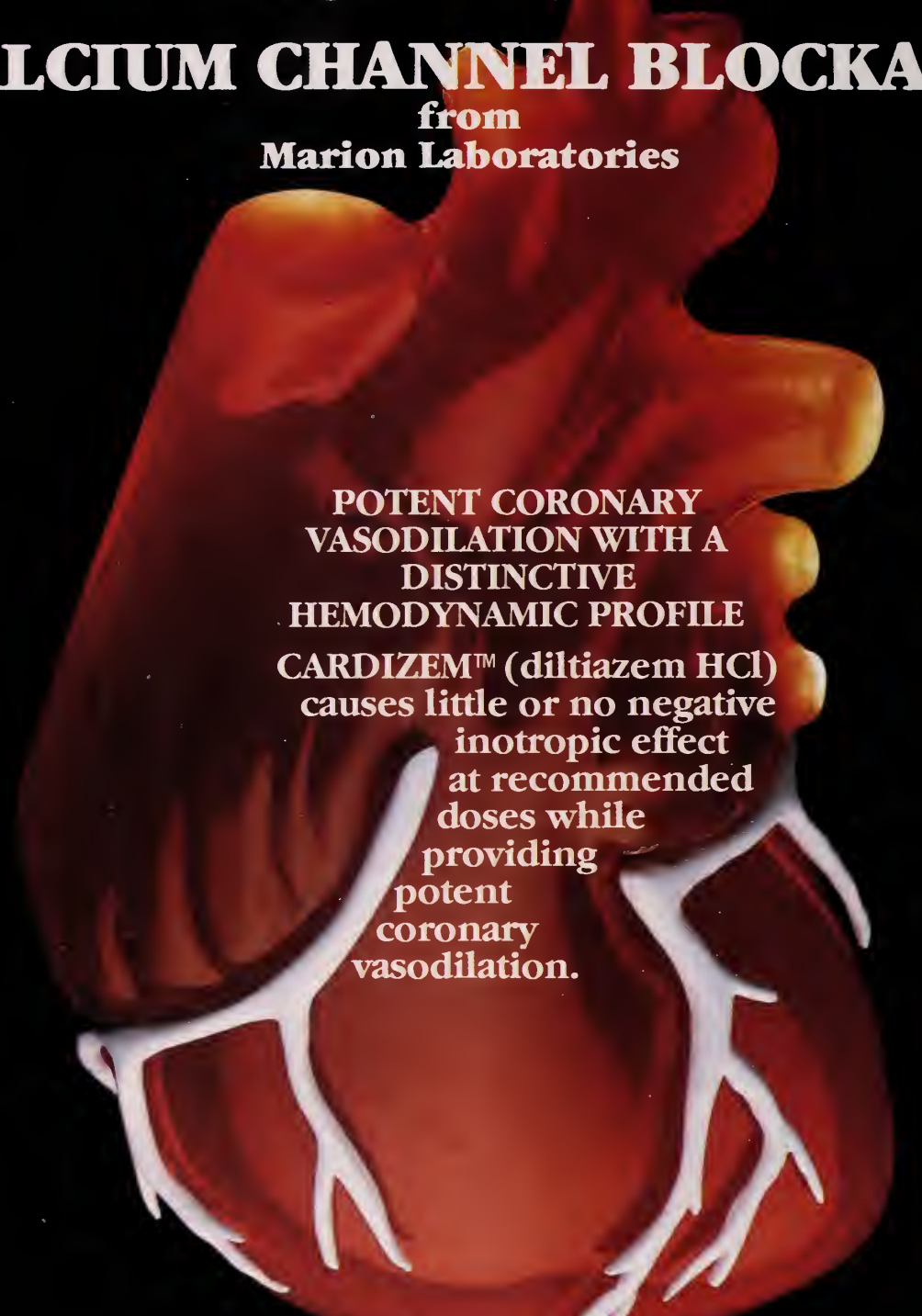
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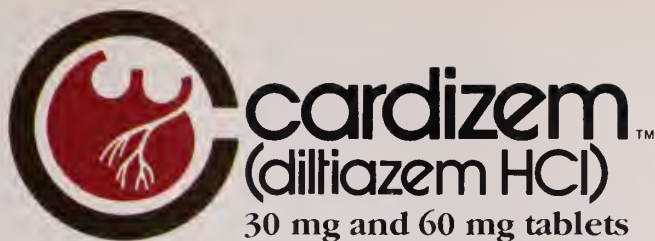
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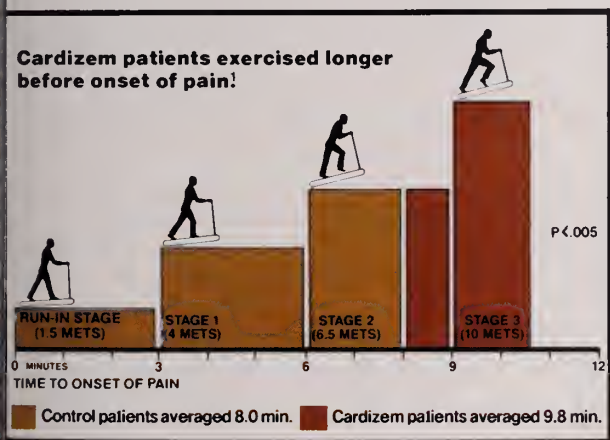
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This study is of special significance because patients not only exercised longer but *to the next higher stage* in the Bruce protocol.

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In other studies, Cardizem produced 41% to 68% reduction of Prinzmetal's variant angina attacks?

[†]This study is a report from one center in a multicenter study.

Therapy with Cardizem produced a low incidence of side effects.

In placebo-controlled trials (222 patients) conducted in the United States, the incidence of adverse reactions reported during Cardizem therapy was not greater than that reported during placebo therapy.

References:

1. Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. *Chest* 78 (July suppl): 234-238, 1980.
2. Schroeder JS, Feldman RL, Giles TD, et al: Multiclinic controlled trial of diltiazem for Prinzmetal's angina. *Am J Med* 72:227-232, 1982.

Those adverse reactions reported most frequently with Cardizem in 959 patients in controlled and uncontrolled U.S. trials have been:

- Nausea 2.7%
- Swelling/edema 2.4%
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- Headache 2.0%
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Other reactions reported infrequently (less than 1%) are listed in full prescribing information on adjacent page.

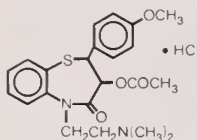
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DESCRIPTION

CARDIZEM™ (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepine-4(5H)-one, 3-(acetyl-oxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride, (+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm. CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina. CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, CARDIZEM decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate/blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of dioxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent as a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown

effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina in patients who cannot tolerate therapy with beta-blockers and/or nitrates or who remain symptomatic despite adequate doses of these agents. CARDIZEM has been effective in short-term controlled trials in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness is incomplete.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (four of 959 patients for D 42%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** There has been a single report in a patient receiving 120 mg of diltiazem tid of marked transaminase elevation (SGOT 4500, SGPT 2300) accompanied by hyperbilirubinemia (to 3 mg%), occurring after four days of treatment. The enzyme abnormalities resolved entirely, and enzymes were nearly normal a week after cessation of treatment. No rechallenge was carried out, but the patient had no evidence of viral hepatitis and received no other drugs but isosorbide dinitrate. No other similar liver injury has been reported in clinical trials, but marketing experience in Europe has resulted in a rechallenge-confirmed instance of hepatocellular injury. However, it should be noted that there have been further episodes of raised transaminases in the absence of diltiazem in this patient, so that the relationship to diltiazem of the abnormalities is not completely clear. Other instances of transaminase elevation have been reported in Europe, but their relationship to the drug is uncertain.

PRECAUTIONS

General. CARDIZEM is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities; the effect of diltiazem on serum digoxin levels has not been examined. The safety of the combination of CARDIZEM and beta-blockers or digitalis is currently being investigated in well-controlled studies.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded. Experience with an added beta-blocker is also extremely limited.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

In addition, the following have been reported infrequently and represent occurrences which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are nausea (2.7%), swelling/edema (2.4%), arrhythmia (2.0%), headache (2.0%), rash (1.8%), and fatigue (1.1%). In addition, the following events were reported infrequently (<1.0%). The order of presentation corresponds to the relative frequency of occurrence.

Cardiovascular: Flushing, congestive heart failure, bradycardia, hypotension, syncope, pounding heart.

Central Nervous System: Drowsiness, dizziness, lightheadedness, nervousness, depression, weakness, insomnia, confusion, hallucinations.

Gastrointestinal: Vomiting, diarrhea, gastric upset, constipation, indigestion, pyrosis.

Dermatologic: Pruritus, petechiae, urticaria.

Other: Photosensitivity, nocturia, thirst, paresthesias.

polyuria, osteoarticular pain.

The following additional experiences have been noted: A patient with Prinzmetal's angina experiencing episodes of vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single 60-mg dose of CARDIZEM.

Experience in 959 patients taking oral doses of CARDIZEM resulted in three cases (0.31%) of second-degree AV block and one case (0.10%) of third-degree AV block at doses of 240 to 360 mg daily.

In rare instances, mild to moderate transient elevations of alkaline phosphatase, SGOT, SGPT, LDH, and CPK have been noted during CARDIZEM therapy. A single incident of markedly elevated liver enzymes associated with symptoms was reported in a patient taking 360 mg per day for four days. Drug was discontinued and enzymes normalized within 1 week.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experiences with oral diltiazem have not been reported. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.6 to 1.0 mg). If there is no response to vagal blockade, administer isoproterenol cautiously.
High-degree AV block	Treat as for bradycardia above. Fixed high-degree AV block should be treated with cardiac pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levaterenol bitartrate).

Actual treatment and dosage should depend on the severity of the clinical situation and the judgment and experience of the treating physician.

The oral LD₅₀ in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD₅₀ in these species were 60 and 38 mg/kg, respectively. The oral LD₅₀ in dogs is considered to be in excess of 50 mg/kg, while lethality was seen in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals and at bedtime, dosage should be increased gradually to 240 mg (given in divided doses three or four times daily) at one- to two-day intervals until optimum response is obtained. The effectiveness and safety of doses exceeding 240 mg per day are currently being investigated. There are no available data concerning dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

Concomitant Use With Other Antianginal Agents.

1. **Sublingual NTG** may be taken as required to abort acute anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be safely administered with short- and long-acting nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

CARDIZEM 30-mg tablets are supplied in bottles of 100 (NDC D088-1771-47). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg scored tablets are supplied in bottles of 100 (NDC D088-1772-47). Each yellow tablet is engraved with MARION on one side and 1772 on the other.

Issued 11/82

Another patient benefit product from



Implantation of Pearls into the Foreskin in South East Asians

CIRIL J. GODEC, M.D.*

Three South East Asian patients with pearls implanted into their foreskin presented in our emergency room. The common indications for pearl implant was an increase in orgasmic sensation and improved social prestige. An understanding attitude toward this cultural peculiarity is suggested.

WITH THE RECENT WAVE of emigration from South East Asia to the United States, and especially to Minnesota, some unknown medical curiosities have emerged. The state of Minnesota ranks 4th in the total number of South East Asian emigrants and first among Hmongs.¹ A few of these curiosities involve urological organs, the phallus in particular. The shape and size of the penis has always been of great concern in almost all cultures. The genital organs represent an emotionally loaded area, and any change in function or configuration of the phallus triggers strong emotional reactions. In this report, three South East Asian male patients with plastic pearls implanted into the foreskin and adjacent penile skin are presented.

Case Reports

Case 1

A 20-year-old male came to the emergency room complaining of a painful swelling on the penis. The patient was initially diagnosed as having keratinous cysts. When we saw him in urology, we elicited the history, after overcoming the language barrier, that a couple of years ago when he was still in Laos, four pearls were implanted into his foreskin by a local physician. The patient explained that coital pleasure was the only indication for pearl implantation.

On physical examination, four small masses were found on the patient's foreskin (Figure 1). On palpation the masses were sturdy, almost too firm for a cyst. The infected area was drained and a foreign body was delivered from a small abscess cavity. The foreign body was 9mm in diameter and represented a synthetic pearl (Figure 2). The Xray of the penis displayed the remaining three pearls implanted into the foreskin (Figure 3); the patient did not want them to be removed.



Fig. 1 — Four small pearls in the prepuce.



Fig. 2 — Spherical pearl removed from the foreskin.

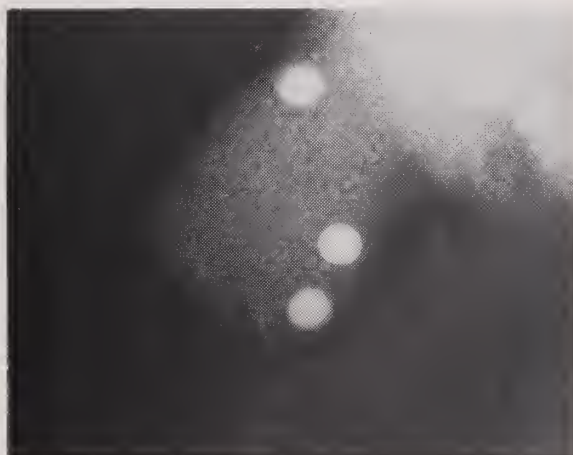


Fig. 3 — Xray of the remaining three pearls left in patient's foreskin.

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Case 2

A 41-year-old Hmong was admitted to the hospital for respiratory distress due to asthma. On routine physical examination a small lump was found on the patient's prepuce. The overlying skin was healthy with no inflammation (Figure 4). The patient explained that about eight years ago, upon his wife's insistence he requested the implant of one pearl only. The main reason for implant was the increase of sexual pleasure for his partner. At the time of his hospital admission the patient did not complain of any discomfort produced by the foreign body, and he did not want it removed.

Case 3

A 26-year-old Laotian male was seen in the emergency room for a right ureteral stone. On routine physical examination we found six small, firm lumps implanted into the foreskin and adjacent penile skin (Figure 5). The patient explained that the pearls were implanted in Laos five years ago. Increased sexual pleasure and improved social prestige were the indications for the pearl implants.

Discussion

All three South East Asian patients explained that increased sexual pleasure for themselves and their sexual partners was the main reason for pearl implants. They further explained that the implanted pearls were much appreciated by their sexual partners and gave them social prestige in their culture.

All three patients were uncircumcised. In their culture the preservation of the foreskin has a social dimension. In their mind, the implanted pearls can improve the quality of intercourse.

Western culture does not have an unanimous opinion about the role of the foreskin in intercourse. Morgan² claims that coitus without a foreskin is comparable to viewing a Renoir while colorblind. In his opinion the prepuce lubricates the glans and thus permits easier vaginal penetration. On the other side, proponents of circumcision argue that after circumcision the glans become less sensitive, orgasm can be delayed and ejaculation postponed. Prolonged intercourse is appreciated by circumcised men and their spouses. Goodwin³ quoted a patient discussing delayed orgasm



Fig. 4 — A single pearl in the patient's foreskin.



Fig. 5 — Patient with six pearls implanted (only four seen on this picture, two are hidden on the other side of the penis).

after prostatectomy: "It takes about 15 minutes longer, Doctor, but we won't begrudge a moment of it."

From the esthetic point of view, the circumcised penis is in general more acceptable in our culture. Nevertheless, beauty is in the eye of the beholder, and the three South East Asian patients were very satisfied, because the implanted pearls not only increased orgasmic experience, but also embellished the configuration of the penis with subsequent increase in social prestige.

Physicians should be cognizant that different cultures favor different configurations of the penis. In our polycultural society, physicians need to know and understand that male genital organs frequently reflect the cultural background of the patient, who deserves tolerance and respect.

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Rheumatology Corner

Lyme Disease as an Etiology of "Unexplained" Recurrent Monoarthritis

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Three patients from Minnesota who presented with recurrent monoarthritis of the knee were found to have typical Lyme disease. All had the classical rash of erythema chronicum migrans, but this had been overlooked or misidentified. One patient had Bell's palsy. Lyme disease may be a common etiology of "unexplained" recurrent monoarthritis in the upper Midwest.

LYME DISEASE WAS first reported by Steere, et al.¹ in 1977 following an outbreak of oligoarthritis in several Connecticut communities along the Long Island Sound. The disease is transmitted by a tick, *Ixodes dammini*, and related *Ixodes* species.² The cause of the disease was recently established when a spirochete was isolated from *Ixodes dammini* ticks and from the blood, skin lesions, and cerebrospinal fluid of several patients with Lyme disease.^{3,4,5} In addition, specific anti-spirochetal antibodies have been detected in most patients with the disease.⁴

Although the largest concentration of cases has occurred in states along the northeastern coast, additional cases have been reported from two other distinct foci in the United States: the upper Midwest and the Northern Pacific coast.^{6,7,8,9,10}

Lyme disease typically occurs in summer months. The first manifestation is often, but not always, a unique skin lesion, erythema chronicum migrans (ECM), which develops at the site of the tick bite. It is often accompanied by headache, stiff neck, fever and chills, myalgias, arthralgias, malaise, fatigue, and lymphadenopathy. Weeks to months later, arthralgias or arthritis, cardiac abnormalities,¹¹ and neurologic abnormalities¹² develop in some individuals.

The arthritis of Lyme disease usually starts suddenly, several weeks but sometimes up to two years, after the rash has disappeared. It is usually monoarticular or oligoarticular, although occasionally it can follow a migratory pattern.¹³ The knee and other large joints are most commonly affected, whereas the fingers and toes are seldom involved. The duration of the arthritis is generally short (mean 1 week), although it occasionally can last a few months. Characteristically, patients have recurrent brief attacks of arthritis usually separated by variable periods of com-

plete remission. The frequency and severity of recurrent attacks are unpredictable. A small percentage develop a chronic arthritis.^{14,15,16,17}

When the characteristic pattern of recurrent brief attacks of oligoarthritis or monoarthritis follows the typical rash of ECM or is accompanied by neurologic or cardiac abnormalities in an endemic area, the diagnosis of Lyme disease is not difficult. However, if the ECM rash does not occur, is overlooked, or is mistaken, the diagnosis may be obscured. This is especially true in areas where the incidence of Lyme disease is low. This report describes three patients in Minnesota who presented with recurrent knee synovitis of unknown etiology who clearly had Lyme disease based on retrospective analysis.

Case Reports

Case 1

A 34-year-old male mechanical technician abruptly developed left knee swelling and mild discomfort in early August, 1981. He denied fever, other joint pains, recent rashes, oral or genital ulcerations, chest pains, eye inflammation, or recent trauma. He was in excellent general health and was taking no medicines. He was referred for further evaluation.

He recalled that in the summer of 1980 while on a weekend outing at a lake cabin in Pine City, Minnesota, he developed a rash near the right axilla accompanied by fevers up to 104°, profound weakness, and fatigue. The rash was erythematous with a faded center, was not painful or pruritic, and had a maximum diameter of six to eight inches. He thought an "insect" had bitten him. Several days later he developed red "blotches" on his calves and abdomen. A physician treated him with topical ointments for a presumed fungal infection. The rashes disappeared after three weeks.

Two weeks after the rash disappeared, he suddenly developed aching in his shoulders and both calves for

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a week. In September 1980, he noted marked pain in both temporomandibular joints. Simultaneously, he noted difficulty swallowing and a neurologist found an absent gag reflex. For the next four months he experienced intermittent jaw pains and myalgias which eventually completely resolved in February, 1981.

He was then well until he developed the left knee effusion in August, 1981. Clinical examination at that time was normal except for a markedly swollen left knee which was not red or hot, and only minimally painful on motion. The erythrocyte sedimentation rate (ESR) was 6 mm/hr. A complete blood count and urinalysis were normal, and antinuclear antibodies and rheumatoid factor were absent. The synovial fluid white count was 4,650 with 30% polymorphonuclear cells; glucose was 120 mg/dl and no crystals were seen. Routine culture and culture for tuberculosis were negative. Following knee aspiration, he became asymptomatic.

In May, 1982, his right knee suddenly swelled and became slightly painful. Aspiration of the knee yielded 140 ml. of fluid. Triamcinolone was instilled twice before relief occurred. In August, 1982, the right knee again became swollen. A repeat intra-articular triamcinolone injection and indomethacin did not provide relief. He had two other episodes of right knee swelling (September and November, 1982), both responding to intra-articular corticosteroids. He has had no further effusions to date.

Synovial analyses were similar throughout his course: white cell counts ranged from 4,200 to 8,500 with predominantly polymorphonuclear cells. Glucose levels were not depressed and rheumatoid factor was absent. Cultures were sterile and crystals were never observed. Serum rheumatoid factor and antinuclear antibodies were negative. Serial CBCs, bilirubin, aspartate aminotransferase, alkaline phosphatase, creatinine, uric acid, and thyroxine were normal. A specimen for circulating immune complexes (by Clq binding assay) at the time of active arthritis in May, 1982 was negative. An Xray of the right knee in November, 1982 was normal. Anti-spirochetal antibodies (indirect immunofluorescence assay, performed by Center for Disease Control, Atlanta, GA) were detected in high titer, >1:2048, in July, 1983.

Case 2

A 55-year-old woman was referred because of recurrent left knee swelling, unresponsive to anti-inflammatory medications and intra-articular corticosteroids.

In July, 1980, while vacationing at her cabin in

Deerwood, Minnesota, the patient had the abrupt onset of fever, chills, fatigue, malaise, abdominal discomfort, and nausea, coincident with the appearance of two expanding, red, saucer-shaped skin lesions on the left buttock and posterior thigh. The rash and other symptoms disappeared over a week, but two weeks later she developed low back pain that radiated into her thighs and pelvis, and an erythematous rash on the left face, thighs, and ankles. The ESR was 52 mm/hr. The CBC, urinalysis, CH50, C4, and C3 values were all normal. Antinuclear antibodies were absent and a throat culture was negative. She was treated for a presumed "viral infection" and "lumbago." The back pain and rash resolved promptly, but one week later she abruptly developed unilateral Bell's palsy. Prednisone was started and the cranial neuropathy improved after a week. She was then well until September, 1980, when she experienced aching in her shoulders, neck, and both temporomandibular joints. The arthralgias waxed and waned for a month and then disappeared.

In March, 1981, she awakened with acute swelling but minimal pain in her left knee and mild right shoulder and left thumb arthralgias. The ESR was 76 mm/hr, the WBC was 6,200, and the hemoglobin was 12.3 gm.%. Antinuclear antibodies, rheumatoid factor, and cryoglobulins were negative. Hemolytic complement (CH50), protein electrophoresis, and left knee Xray were normal. Synovial analysis revealed 13,400 white cells (91% polymorphonuclears) and a glucose of 92 mg.%; cultures were sterile and no crystals were seen. Intra-articular corticosteroids provided complete relief.

Seven months later (October, 1981), she again had left knee swelling which resolved spontaneously over three weeks, but recurred in November, 1982. The knee swelling waxed and waned over four months, never fully disappearing despite two intra-articular steroid injections and successive courses of indomethacin, ibuprofen, and piroxicam. Repeat synovial analyses showed persistent inflammatory change, and a repeat knee Xray was normal.

The patient denied eye symptoms, oral or genital ulcers, Raynaud's phenomenon, diarrhea, or dysuria. She did recall a neighbor having a tick bite and a "rash" at the time she first became ill. At the time of her last contact in August, 1983, the knee swelling was slowly improving. Anti-spirochetal antibodies performed in July, 1983, were present in high titer, >1:2048.

Case 3

A 51-year-old housewife was admitted to the hos-

pital with sudden pain and swelling in her left calf, four weeks after arthroscopy for recurrent pain and effusions in the knee. An arthrogram of the knee disclosed a ruptured popliteal cyst.

In July, 1974, the patient picnicked with friends at a cabin in Faribault, Minnesota. A week later, she developed chills, fever, and diffuse myalgias. This resolved, but two weeks later, she developed pain in the left temporomandibular joint, both shoulders, and the left 5th metacarpophalangeal joint, fever to 100°, and a patchy skin rash on both thighs and buttocks. Her physician described four discrete large patches of erythema on the lateral right thigh, left thigh, left buttock, and the face. The lesions looked "like the wheal surrounding a hive without too much of a wheal in the center," and they blanched readily. The hemoglobin was 11.3 gm, the white count was 9,150 with 85% neutrophils, and the ESR was 84 mm/hr. The rheumatoid factor and antinuclear antibodies were negative, urine was clear and a chest Xray was normal. As ASO titer was elevated. Benadryl afforded no relief. Prednisone 40 mg/day provided transient relief, but as the dose was tapered, she developed pain and swelling in her shoulders again, several hand joints, and the right elbow. Her rash waxed and waned for one week and disappeared, but a fever up to 101° persisted. Aspirin was added to 5 mg. of Prednisone per day and her symptoms subsided. One month later, she again developed pain and tenderness in the right shoulder and right calcaneus. This subsided over one week and her medications were discontinued.

In January, 1975, she had transient aching in her wrists and knees and in August, 1975, she had swelling in the right knee and aching in the left wrist. In December, 1975, 16 months after her original illness, the patient spontaneously developed a large left knee effusion. Synovial fluid contained 14,700 white cells with 86% neutrophils; no crystals were seen and rheumatoid factor was absent; bacterial cultures were negative. An ESR was 85 mm/hr. and serum rheumatoid factor was negative. An Xray of the knee was normal. Phenylbutazone provided slight improvement. Intra-articular corticosteroids provided complete relief.

Over the next five years the patient experienced numerous episodic right knee effusions, lasting about one week at a time. She took aspirins intermittently. On three occasions, large amounts of synovial fluid were aspirated and corticosteroids were injected with relief.

In December, 1982 she abruptly developed a large, tense left knee effusion, which was drained of 160

ml. of fluid. Synovial analysis, including tuberculosis and fungus cultures, was similar to previous ones. An Xray of the left knee was normal. Intraarticular steroid was injected and tolmetin was started with relief, but a large effusion recurred three months later.

In May, 1983, she underwent diagnostic arthroscopy of the left knee. Patellar chondromalacia and a lateral meniscal tear were observed. Grossly, the synovium was slightly inflamed but not shaggy. A non-specific inflammatory synovitis was seen microscopically with edematous villi and moderate perivascular lymphocytoid cell infiltrates. No granuloma were seen. All cultures were negative. Four weeks later she presented with the ruptured popliteal cyst.

The patient was in otherwise excellent health. There was no history of eye inflammation, oral ulcers, Raynaud's phenomenon or trauma to the knees. Anti-spirochetal antibodies, performed in July, 1983, were present in high titer, >1:2048.

Discussion

In this report, three patients are described who were seen for similar problems, namely recurrent monoarthritis of "unknown" etiology. In each instance, a careful review of the history indicated that the patient had Lyme disease. All patients had the sudden onset of a febrile illness with the characteristic rash of erythema chronicum migrans, occurring in the summer months in or near areas known to be infested with *Ixodes dammini*. All experienced episodes of oligoarthritis within six weeks of the febrile illness, followed by recurrent episodes of monoarthritis of one or both knees. The second patient had Bell's palsy one month after her initial symptoms. All tests for other common arthritides were repeatedly negative. All were found to have high titers of specific anti-spirochetal antibodies, two to nine years after the onset of their disease.

Although the course of these patients' arthritis is typical of Lyme disease, the cause of the disease had been overlooked. In regions where Lyme disease is highly prevalent (Connecticut and Long Island, New York), a presumptive diagnosis of Lyme disease has been made in the absence of the classic ECM rash.^{1,13} In Minnesota, however, where only a handful of cases has been published,⁹ suspicion for the disease remains low. Consequently, the diagnosis of Lyme disease may not be seriously entertained in areas of low prevalence. This report draws attention to recurrent monoarthritis as a presenting complaint of Lyme disease.

The importance of diagnosing recurrent monoarthritis as Lyme disease is that it will spare the patient additional unnecessary testing. In addition, it may influence further therapeutic decisions. Since the long range outlook in patients with Lyme arthritis is generally favorable, dedication to a conservative medical regimen might be prolonged before considering surgical procedures such as synovectomy. For example, several patients with chronic synovitis have had spontaneous resolution after 12 to 16 months.¹⁴

Although Lyme disease should be considered in the diagnosis of "unexplained" recurrent monoarthritis, it is crucial to recognize the early clinical pattern of the disease. If antibiotic therapy is instituted while the skin rash is present, the skin lesion and associated symptoms resolve faster and the incidence of arthritis is lower than if antibiotics are not administered.¹⁸ Tetracycline is now considered the most effective antibiotic.¹⁹ Once arthritis has developed, it is unknown whether antibiotics ameliorate the inflammation or prevent recurrences. Although spirochetes have not been identified in the synovial fluid of any patients with Lyme disease to date, an organism has been isolated from cerebrospinal fluid two and a half months after ECM in one patient.⁴ This raises the possibility that the spirochete might, indeed, persist

in some or even all patients. Perhaps further studies will indicate whether it is appropriate to treat all patients with antibiotics regardless of the stage of their disease.

Although serologic testing for anti-spirochetal antibodies is not yet commercially available, testing can presently be obtained through the State Department of Health. This availability should improve detection of the disease in Minnesota. It is not known for how long anti-spirochetal antibodies exist after infection or in what percentage of patients with chronic or recurrent arthritis they may persist. Therefore, a negative test may not exclude Lyme disease, whereas a positive test is considered diagnostic.

In summary, three adult patients who presented with recurrent knee monoarthritis were found to have typical Lyme disease. In two, the rash of ECM had been present but overlooked and in the third, the rash was misidentified. It is important to emphasize that in areas of relatively low prevalence, such as Minnesota, the disease may present as recurrent monoarthritis of large weight-bearing joints.

Acknowledgments

The author thanks Dr. David N. Williams for reviewing this manuscript, and the Word Processing Center at the Park Nicollet Medical Center for typing this manuscript.

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Letters to the Editor

Dear Doctor Reece:

An Indonesian physician, with impressive professional credentials, has immigrated with his family to the Twin Cities area and is now seeking assistance to enable him to be licensed to practice medicine in the State of Minnesota. The State Board of Medical Examiners requires one year of domestic medical training. Mount Sinai Hospital has such a program but at the moment we have no opening for training a foreign physician.

I have met with his physician and my conclusion is that he is highly qualified and deserving of support from our medical community. If any reader knows of an opportunity for a year's training in a local hospital, or could possibly create such an opportunity, please call me at Mount Sinai Hospital, 871-3700, Extension 1514.

Reuben Berman, M.D.

Chairman

Foreign Medical Education Committee

Dear Editor:

I wish to commend Doctors Strefling and Ness on their excellent article on Lumbar Laminectomy.¹ Despite uniform application of diagnostic and treatment standards, they demonstrate inferior outcomes for injured workers involved in workers' compensation. This is a phenomena which must be addressed by all physicians treating such cases. It is not appropriate to use non-medical explanations for poor outcomes.

There is a large and growing body of knowledge concerning central nervous system modulation of pain perception and on the relationship between pain and disability. My Pain Clinic experience suggests that there are medically significant and treatable conditions present in patients suffering from chronic disabling pain. Foremost of these is the passive aggressive personality. These are the patients who don't "respond" well to conservative or surgical treatment. There is evidence that these individuals are also more likely to be involved in the accident process.² Anger, possibly deep concealed, seems to be an emotion universally present in Pain Clinic patients. Other conditions may also be associated with failure to recover, including: depression, chemical abuse, conversion hysteria and, rarely, malingering. In my experience, inadequate medical or surgical treatment of the original pathologic process is an unlikely cause for failure to recover, although it is usually the first possibility considered by both the physician and the patient. This explains the poor success rate of second and subsequent procedures.

One additional comment concerning the conservative treatment of lumbar spine conditions. I have found rest, immobilization, heat and traction to be of symptomatic value, at best. Medical treatment of inflammation during the acute phase can be of great value. The best long-term results are attained through the use of education, stress management, and compliance with a well-designed exercise and fitness program.

John E. Quast, M.D.

Medical Director, Pain Management and Rehabilitation Center
St. Joseph's Hospital
St. Paul

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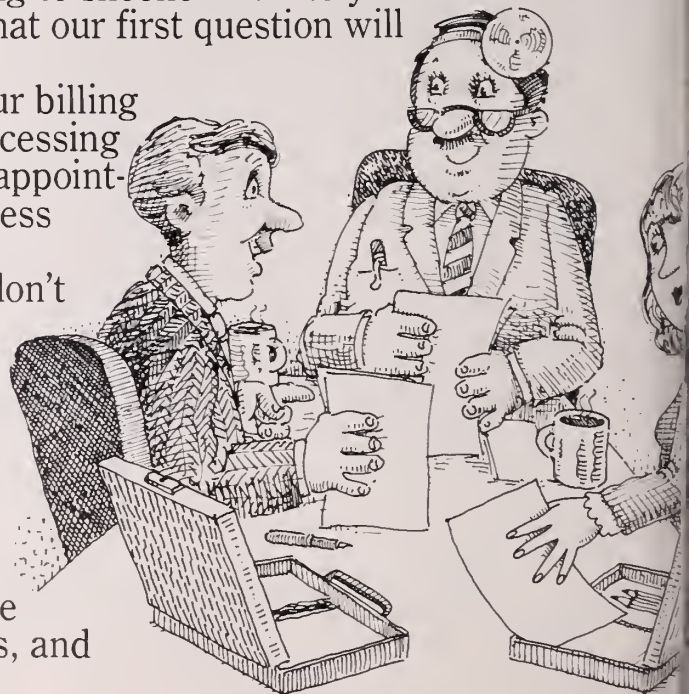
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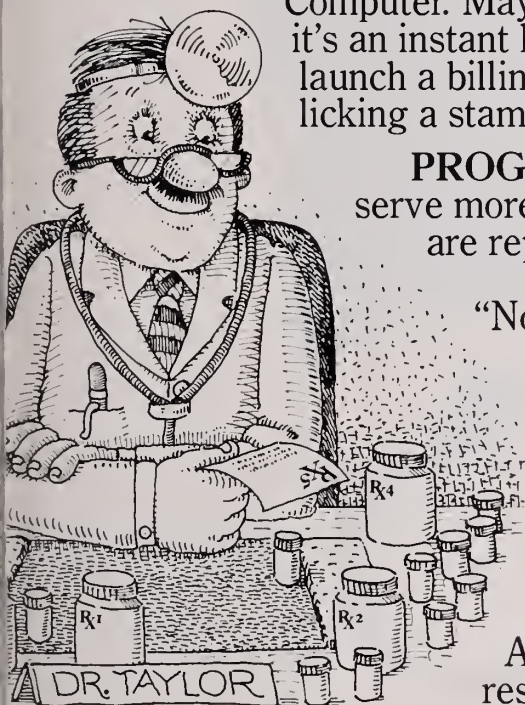
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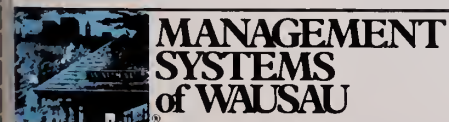
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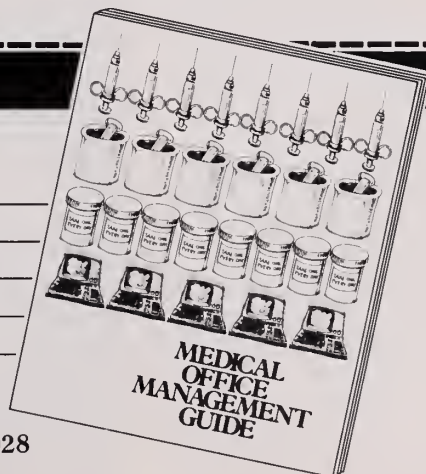
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Brief Summary. Consult the package literature for prescribing information.

Indications and Usage: Cefclor® (cefclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci). Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Cefclor.

Contraindication: Cefclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics, including Cefclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions: General Precautions—If an allergic reaction to Cefclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Cefclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the mother's or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Cefclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Cefclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinistest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cefclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Cefclor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one

hour. The effect on nursing infants is not known. Caution should be exercised when Cefclor® (cefclor, Lilly) is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions: Adverse effects considered related to therapy with Cefclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis, arthralgia, and, frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cefclor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematologic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

In clinical trials, patients with bacterial bronchitis due to susceptible strains of *Streptococcus pneumoniae*, *H. influenzae*, *S. pyogenes* (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Cefclor.⁷

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hour. The effect on nursing infants is not known. Caution should be exercised when Cefclor® (cefclor, Lilly) is administered to a nursing woman.

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*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.

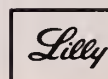
Note: Cefclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46285. Eli Lilly Industries, Inc., Carolina, Puerto Rico 00630.

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Breast Cancer Today*

DAVID T. KIANG, M.D., Ph.D.† and B.J. KENNEDY, M.D.†

In the past few years considerable changes have occurred in the concept to improve long-term control of breast cancer.

A DRAMATIC BREAKTHROUGH in the management of breast cancer does not seem imminent. However, considerable changes in the concept to improve long-term control of the disease have occurred in the past few years. These changes involve the entire spectrum of management, from early detection to treatment philosophy for advanced breast cancer.

Detection of Early Lesions

Detection of primary breast cancer at its earliest stage is the basic concept for assuring higher curability. In 1963 the Health Insurance Plan of Greater New York (HIP), under contract with the National Cancer Institute, undertook a mass screening program for the detection of early breast cancer.¹ The HIP study, in screening a small number of women, revealed a low detection rate for breast cancer (0.42%). The study suggested that xeromammography was not cost-effective in women below the age of 50. A current report from the Breast Cancer Detection Demonstration Project (BCDDP) has provided a dramatic difference in results.² In a population of over 180,000 women, 3,715 cases (1.3%) of breast cancer were detected during the five-year screening and follow-up study. Compared with results from the HIP study, the incidence of cancer detected by means of xeromammography has increased from 39% to 85% in the 40-49 age group, and from 60% to 92% in the 50-59 age group. This increase is probably due to the improvement of xeromammographic technique. Tumors detected by physical examination have remained at a steady rate of 60% in both HIP and BCDDP studies. The breast cancers found in the BCDDP study were of an earlier stage. Approximately 32% of the cancers were either non-infiltrating, or if infiltrating, the size was less than 1 cm. In addition, over 80% of the patients had no axillary lymph node involvement at

the time of detection. This detection of early breast cancer reinforces the guidelines of the American Cancer Society that every woman over age 50 should have an annual mammogram or similar evaluation. Thermography is not a sensitive modality in routine breast cancer diagnosis.^{3,4} Ultrasound, as yet, does not have sufficient capability as a screening modality.⁴

The Role of Surgery or Radiation Therapy in Primary Breast Cancer

Modified radical mastectomy for stage I and II breast cancer has been considered as the standard treatment modality. In the last five years, numerous reports⁵⁻¹⁰ have demonstrated that initial excision of the primary lesions followed with radiation therapy for stage I or stage II disease has provided a 5-year or 10-year survival rate equivalent to that of a modified radical mastectomy. The overall survival rates in five years or 10 years were 91% and 81% in stage I disease, and 77% and 54% in stage II disease, respectively. This has resulted in an intensive analysis of surgical and radiotherapy results, and numerous ongoing studies have been initiated.

The method of radiation therapy for primary breast cancer includes: (a) the excision of gross tumors, and the histological examination of axillary nodes; and (b) 4500-5000 rads plus 1000-1500 rads boosting through the entire breast. The nodal area would be included in the radiation fields if it has cancer involvement. This type of radiation therapy, however, can only be administered at selected centers. The complication from radiation therapy appears to be minimal: less than 1% of patients had one of these complications, such as rib fractures, radiation pneumonitis, limitation of arm motion, arm edema, and brachial plexus injury. In obese patients with large breasts, or in women with very small breasts, radiotherapy is not recommended.

For stage I and II breast cancers, either modified radical mastectomy or radiation therapy should be

*Supported by N.I.H. Grant CA 30350, the Minnesota Medical Foundation, and the Masonic Hospital Fund, Inc.

†Section of Medical Oncology, Department of Medicine, University of Minnesota Medical School, Minneapolis, Minnesota.

considered as primary therapy. Every woman should be informed of the alternatives. For cancer of a more advanced stage (III), a third modality using intensive chemotherapy followed by either modified radical mastectomy or radiation therapy is currently under study.

Current Status of Adjuvant Chemotherapy

Adjuvant chemotherapy is designed to improve the cure rates, or disease-free interval, following mastectomy. The seven-year follow-up results on cyclophosphamide, methotrexate, and 5-fluorouracil (CMF) adjuvant therapy found in the Milan study are available.¹¹ Adjuvant CMF has improved the relapse-free survival in patients, regardless of the number of lymph nodes (1-3, or over 3) involved. The initial analysis suggested there was no benefit from adjuvant therapy in the postmenopausal group, although, retrospectively, this was due to the use of reduced doses of the drug.¹² When adequate drug dosages were employed, there was evidence of benefit in this group.

The same group of investigators has also shown that a short term of adjuvant therapy appears adequate. Less adjuvant chemotherapy, using six cycles of CMF, has yielded results comparable to when 12 cycles of CMF were used.¹³ The adjuvant therapy, to be most effective, should be initiated within one month following the primary therapy.

There is tremendous enthusiasm calling for the incorporation of Tamoxifen in adjuvant therapy programs. Preliminary results are available from two studies. The National Surgical Adjuvant Breast Cancer Project (NSABP) has shown that adding Tamoxifen to L-PAM-FU improves the disease-free survival rate.¹⁴ Benefit from the addition of Tamoxifen has been progressively enhanced in tumors containing a higher estrogen receptor content. In the study by Hubay et al.¹⁵ using CMF as adjuvant chemotherapy, the addition of Tamoxifen to chemotherapy in estrogen receptor-negative tumors has no significant influence on the recurrence rate. In patients with estrogen receptor-positive tumors, Tamoxifen has significantly reduced the recurrence rate in this three-year follow-up study. There is no doubt that Tamoxifen is effective for estrogen receptor-positive tumors by delaying the tumor recurrence. Whether this benefit can be translated into long-term control of the disease is yet to be proved.

Adjuvant Protection for Chemotherapy

Both Adriamycin and cyclophosphamide are effective chemotherapeutic agents for metastatic breast

cancer. However, their use has been limited in some patients because of the untoward side effects.

The cardiotoxicity from Adriamycin was thought to be due to the generation of free radicals that caused chromatin clumping and mitochondrial swelling, resulting in myofibril lysis. In the symposium presented at the 13th International Cancer Congress in Seattle (September 1982), there was considerable discussion of the use of N-acetylcysteine (NAC) in the prevention of the cardiotoxicity from Adriamycin. It was thought that the -SH group of the NAC may prevent the cardiotoxicity. In animal studies the NAC can reduce the mitochondrial damage. It did not change the systolic time interval nor the diameter of the ventricle measured by echocardiogram. It is interesting that NAC has reduced the animal death from Adriamycin toxicity.¹⁶ So far, the role of NAC in the prevention of cardiotoxicity from Adriamycin, especially in humans, is yet to be determined.

This interesting compound appears to prevent hemorrhagic cystitis from cyclophosphamide. The metabolites from cyclophosphamide include phosphoramidate mustard and acrolein. The former is the active element for chemotherapeutic effect, while acrolein is the major culprit for cystitis. The acrolein binds and inhibits the function of P-450. This inhibition can be reversed by cysteine, N-acetylcysteine or glutathione.¹⁷ Most of the protective effects from NAC were demonstrated in animals and were promising.¹⁸ Investigation of its efficacy in human patients is in progress.

A New Chemotherapeutic Regimen

Numerous modalities of combined chemotherapies have recently been tried to improve the response rate and perhaps the duration of survival. Among these, high-dose methotrexate and 5-fluorouracil appear to be an interesting combination.

In 1981 Gewirtz and Cadman reported that a moderate dose of methotrexate, 200 mg/M², followed one hour later with 5-FU, 600 mg/M², and 24 hours later with Citrovorum rescue, was an effective regimen.¹⁹ When treatment was given on day 1 and day 8 of every 28-day cycle, it produced an objective response in 9 of 17 patients who had had prior chemotherapy.

In our investigation of this regimen in six patients whose blood CEA levels were initially elevated at 34 ng to 464 ng/ml, a single dose of methotrexate-5-FU-Citrovorum produced a rapid reduction of CEA within 6-13 days in all but one patient. However, the reduction recovered after a two-week gap without chemotherapy, while weekly chemotherapy could sustain the CEA at the decreased level. There was no

impairment of renal function, nor any significant hematologic side effects. We have seen a favorable response in one patient with severe marrow infiltration and pancytopenia, which precludes the use of other types of chemotherapy. This is a potent treatment program requiring rigid management, such as hydration and alkalinization, to prevent side effects.

A Combination of Hormone and Chemotherapy

Approximately five years ago, we initiated a study of postmenopausal patients with advanced breast cancer by combining estrogen (Diethylstilbestrol) with chemotherapy (cyclophosphamide and 5-FU).²⁰ The patients were stratified according to disease-free interval and disease-dominant sites. The treatment was randomized according to tumor estrogen receptor status. In estrogen receptor-positive patients or the group in whom the receptor status was unknown, the treatment was either estrogen alone or estrogen combined with chemotherapy. In the estrogen receptor-negative group, our study compared chemotherapy alone with a combination of chemotherapy and estrogen.

Recently we have updated our results with a longer period of follow-up. The results still demonstrated that a combination chemo-hormone therapy has a significantly higher response rate than hormonal therapy alone in the estrogen receptor-positive and estrogen receptor-unknown groups. In the estrogen receptor-positive group, 53% of the patients responded to estrogens, while only 24% in the estrogen receptor-unknown group responded. The combination of chemotherapy with estrogens improved the response rate to 86% and 64%, respectively.

As to the survival, the combination therapy was superior over sequential therapy using hormonal therapy, followed by chemotherapy in the estrogen receptor-positive group. The survival curve of patients receiving a combination chemo-hormonal therapy leveled off at 51% by 3½ years and main-

tained at this level, while the median survival for estrogen receptor-positive patients receiving sequential therapy was 2½ years.

It should be noted that most of the reports on the combination of endocrine and chemotherapy revealed an increase of response rate, but a lack of beneficial effect on survival when the receptor status of the patients was not considered in this type of study.^{21,22}

Predicting Chemotherapeutic Response

In our laboratory, we have utilized a tumor thymidine kinase (Tk) assay in predicting chemotherapeutic response.²³ Currently, 45 patients have been treated with chemotherapy following Tk assay. Twelve of 14 tumors with high Tk activity responded, while only 5 of 31 tumors with low Tk responded (86% vs 16%, $p < 0.005$).

Using a combination of the Tk and the steroid receptor assays, an individualized and effective strategy may be formulated regarding the use of hormonal therapy or chemotherapy alone and in combination.

Conclusion

We have briefly touched on several areas of recent development in the management of breast cancer, such as improvement in the detection of early breast cancer; using an alternate approach for the management of primary tumors; the addition of hormonal therapy as adjuvant therapy in order to reduce the side effects of cytotoxic agents; to derive more effective treatment programs for advanced breast cancer; and finally, to maximize the utilization of biological markers in predicting hormonal therapy or chemotherapeutic responses. These have represented many changes in the concept of management.

The management of breast cancer is by no means rigidly established. The progress under way demonstrates the need to individualize the treatment methods, taking into consideration the multiple biologic variables unique to breast cancer.

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15-23. Will be found on page 344.

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Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

June 1984

2, 19 & 20 Basic Life Support (CPR) Instructor Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 2/932-5189

3-16 Annual Surgery Course; Office of CME, U of M Medical School, Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director CME U of M, Box 293 Mayo Memorial, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

4-15 Running & Endurance Sports: A Scientific Appraisal; University of MN-Duluth School of Med; Duluth, MN; CONTACT: Jan Roche, 2400 Oakland Ave., Duluth, MN 55812, 218/726-7916.

4-15 Dual Disorders: Chemical Dependency & Psychiatric Disorder; Alcohol-Drug Treatment Program, Dept. of Psychiatry, Univ. of MN; L'Hotel Sofitel, Mpls.; CONTACT: Joseph Westermeyer, M.D., Dept. of Psychiatry, U of MN Hosp., Mpls., MN 55455; 612/373-7952

4-16 Management of Pelvic Trauma; American Academy of Orthopaedic Surgeons; AMFAC Hotel, Minneapolis; CONTACT: 2/822-0970.

5-29 Advanced Cardiac Life Support Course; Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

6-27 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

7-29 Real Time Ultrasound in Obstetrics; U of M Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D. Interim Director, CME, U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

7-28 Human Aging VII — Senile Dementia; Office of CME: U of M Medical School; Willey Hall Auditorium; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, S.E., Minneapolis, MN 55455; 612/373-8012.

July, 1984

2-27 Medical Treatment Update for the Family Physician; North Memorial Medical Center; Plummer's Great Slave Lake Lodge — Canada; CONTACT: Joseph Bocklage, M.D., 608 Oakdale Medical Bldg., Robbinsdale, MN 55422; 612/588-9478.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

20-22 The Knee: Current Concepts of Treatment & Techniques; American Academy of Orthopaedic Surgeons, The Kahler Hotel, Rochester, MN; CONTACT: 312/822-0970

20-22 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

24-25 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN; CONTACT: Kari Ebert, 612/221-3991.

August 26-September 1 Transplantation Society Congress; U of MN Medical School, Mpls., MN; CONTACT: Bart Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012

27-28 Basic Life Support Course, Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

September, 1984

2-3 Annual Meeting, MN Orthopedic Society; Winnipeg; CONTACT: Jack M. Bert, M.D., 307 Gallery Medical Bldg., 17 West Exchange St., St. Paul, MN 55102.

10-14 Chest Radiology; CME University of MN Medical School; Willey Hall Auditorium, U of M, Minneapolis; CONTACT: Bart W. Galle, Ph.D., CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware Street, SE, Minneapolis, 55455; 612/373-8012.

September (continued)

10-14 47th Annual Radiology Course: Radiology/84 — Thoracic Imaging; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

13-14 Medical Directors Conference; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-15 Orthopaedic Nursing in the 80's — New Concepts and Challenges; Metropolitan Med. Center & Hennepin County Med. Center; Pillsbury Auditorium; CONTACT: Rose Jagodzinski, 701 Park Ave. So., Mpls., MN 55415, 612/347-2812.

14-15 Common Problems in Cardiology; Park Nicollet Medical Foundation; CONTACT: Elaine Anderson, 5000 W. 39th St., Minneapolis, MN 55426; 612/927-3703.

15 New Developments in Anxiety Relating to Medical Illness; North Memorial Medical Center; Vance C. DeMong Auditorium, North Memorial Medical Center; CONTACT: Molly Kunding, Dept. of Education, 3300 Oakdale Avenue North, Mpls., MN 55422, 612/520-5455.

17-19 Topics in Geriatric Medicine: Management of Alzheimer's Disease; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

17-19 Triennial International Symposium on Male Sexual Dysfunction; Mayo Clinic/Mayo Foundation, 200 First St. SW, Rochester, MN 55905; CONTACT: William L. Nietz.

19 Impotence and Penile Implants; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20-22 7th Annual Trauma & Critical Care Seminar; University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20-22 Trauma & Critical Care Seminar; CME U of M; Hennepin County Medical Center, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, U of M CME, Box 293 Mayo Memorial Building, 420 Delaware St. SE, Minneapolis, 55455; 612/373-8012.

21-22 Advanced Trauma Life Support; University of MN-Duluth Medical School; CONTACT: C. L. Barbee, M.D., 1000 E. First St. — Suite 203, Duluth, MN; 218/727-7259.

22 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700 ext. 1117.

28 Problems in Family Practice; The Duluth Clinic, Ltd; Holiday Inn, Duluth; CONTACT: J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805; 218/722-8364.

28 Northwestern Pediatric Society Meeting; Northwestern Pediatric Society; Chanhassen Dinner Theatre, Chanhassen, MN; CONTACT: Fredric Kleinberg, M.D., Dept. of Pediatrics Mayo Clinic, Rochester, MN 55905; 507/284-2922.

October 1984

1 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3-5 Annual Internal Medicine Review Course: Endocrinology, Cardiology and Hematology; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

4-13 Advance Cardiac Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189.

11-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

18-20 The 17th Annual Orthopaedic & Trauma Seminar; Hennepin County Medical Center, Pillsbury Auditorium, 701 Park Avenue So., Mpls., MN; CONTACT: Ramon B. Gustilo, M.D., 701 Park Ave So. 813, Minneapolis, MN 55415.

26-27 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN. CONTACT: Kari Ebert, 612/231-3991.

27-28 Update in Cardiology; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

29-31 Clinical Reviews; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

prescribing, see complete prescribing information in CO. literature or PDR. The following is a brief summary.

WARNING

This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy directed to the individual. If this combination represents the drug so determined, its use may be more convenient in initial management. Treatment of hypertension and edema is static but must be reevaluated as conditions in each patient warrant.

Indications: Concomitant use with other potassium-sparing agents such as spironolactone or amiloride. Further use in patients with progressive renal or hepatic dysfunction, hyperkalemia, or persistently elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Contraindications: Do not use potassium supplements, dietary or otherwise, if hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is required, potassium tablets should not be used. Hyperkalemia may occur and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one-third of the normal, or in the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K⁺ levels should be determined. If hyperkalemia develops, substitute a thiazide alone. **Warnings:** Associated widened QRS complex or arrhythmias requires prompt additional therapy. Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and their excretion may appear in breast milk. If their use is essential, the mother should stop nursing. Adequate information on use in nursing is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma, including exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids, and during concurrent use with amphotericin B, corticosteroids or corticotropin [ACTH]). Periodic BUN and creatinine determinations should be made, especially in patients with early diabetes or those with suspected or confirmed renal insufficiency. Cumulative effects of the drug may develop in patients with impaired renal function. Thiazides should be used with caution in patients with impaired hepatic function. They can cause coma in patients with severe liver disease. Observe patients for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic and hemolytic anemia have been reported with thiazides. Thiazides may cause manifestation of diabetes mellitus. The effects of oral anticoagulants may be enhanced when used concurrently with hydrochlorothiazide. Dosage adjustments may be necessary. Clinically insignificant changes in arterial responsiveness to norepinephrine have been reported. Thiazides have also been shown to increase the blocking effect of nondepolarizing muscle relaxants such as tubocurarine. Triamterene is a weak folic acid antagonist. Do not use in blood studies in cirrhotics with splenomegaly. Anticholinergic effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. Triamterene has been found in renal stones in association with the other usual components. Therefore, Dyazide should be used with caution in patients with histories of stone formation. A few occurrences of acute renal failure have been reported in patients on Dyazide when treated with indomethacin. Therefore, caution is advised in administering nonsteroidal anti-inflammatory agents with Dyazide. The following may occur: transient elevated BUN, hypokalemia or both, hyperglycemia and glycosuria (diabetic requirements may be altered), hyperuricemia and gout, hypocalcemia (in hypokalemia), decreasing alkali reserve, metabolic acidosis. Dyazide interferes with fluorescence measurement of quinidine. Hypokalemia is uncommon with Dyazide but should it develop, corrective measures should be taken such as potassium supplementation or increased dietary intake of potassium-rich foods. Corrective measures should be taken cautiously and serum potassium levels determined. Continue corrective measures and Dyazide should be discontinued until serum potassium levels reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Concurrent use of furosemide may increase the risk of severe hypokalemia. Serum PBI levels may decrease without signs of thyroid dysfunction. Calcium excretion is decreased by thiazides. Dyazide should be withdrawn before conducting tests for parathyroid function.

Dyazide may add to or potentiate the action of other antihypertensive drugs.

Dyazide may reduce renal clearance of lithium and increase the risk of lithium toxicity.

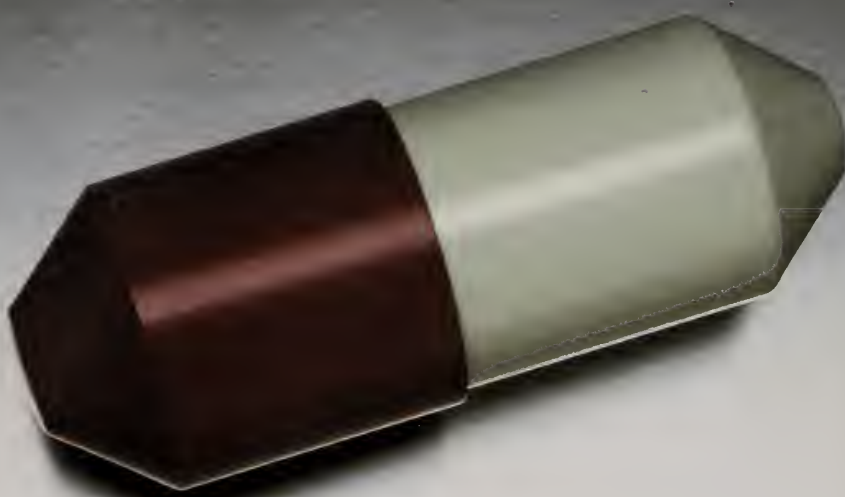
Adverse Reactions: Muscle cramps, weakness, dizziness, headache, mouth, anaphylaxis, rash, urticaria, photosensitivity, other dermatological conditions; nausea and vomiting, constipation, other gastrointestinal disturbances; postural hypotension (may be aggravated by alcohol, barbiturates, narcotics). Necrotizing vasculitis, paresthesias, icterus, hepatitis, xanthopsia and respiratory distress including pulmonary edema, transient blurred vision, salivary gland swelling have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual components. Rare incidents of acute interstitial nephritis have been reported. Impotence has been reported in a few patients on Dyazide, although a causal relationship has not been established.

How Supplied: Dyazide is supplied in bottles of 1000 capsules; Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100.

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Hypertension Control in Two Rural Communities

RUSSELL V. LUEPKER, M.D.*, DAVID R. JACOBS, Ph.D.*, JAMES W. BROWN, Ph.D.*,
JUDITH L. SOBEL, Ph.D.*, and RONALD PRINEAS, M.B.B.S. Ph.D*

Hypertension detection, treatment and control has improved significantly in urban areas. Less is known about rural areas where it is suspected that barriers to control are greater and medical innovations diffuse more slowly. To determine the adequacy of hypertension control in rural areas, two rural communities (populations approximately 5,000 each) in Minnesota were surveyed in 1979. Five hundred and ninety adults (age 25-64) were randomly selected.

Participation in the survey was 85%. The population was predominantly white with a few Native Americans (<1%). The prevalence of hypertension characterized by blood pressure ≥ 160 and/or 95 mmHg or use of medications was 15.8%. Of those, 52% were on medications and controlled. The remainder were on medications/uncontrolled (13%), aware but not on medications (18%), and unaware of hypertension (18%). Comparison of these data to earlier studies of rural Minnesota (1974) indicates marked improvement in hypertension control but still somewhat behind urban Minnesota areas.

THE RECOGNIZED consequences of hypertension and the demonstrated efficacy of its treatment have made its detection and control a major health goal of the past decade. Widespread public and professional education and available medications appear together to have significantly reduced the prevalence of uncontrolled hypertension.¹ Population based surveys, comparing the 1960s and the late 1970s, confirm improved detection and control.^{2,3} However, most surveys are urban based and less is known of hypertension control in the rural United States. The likelihood of poor hypertension detection and control in rural areas involves the issues of fewer medical resources and more difficult access, lower incomes, less health insurance and less compliance with medical regimens.⁴⁻⁶ These observations have led to a call for hypertension programs targeted for rural areas such as those already effective with urban poor and minorities.⁴

In the setting of a community health education program, we systematically measured blood pressure in a randomly selected adult population sample in two rural Minnesota towns to evaluate the extent of hypertension detection and control. The survey findings

and their possible implications to the public's health are presented here.

Methods

Population Sample. Montevideo and Pipestone, Minnesota were the participating towns. They are rural county seats, both in southwest Minnesota, of

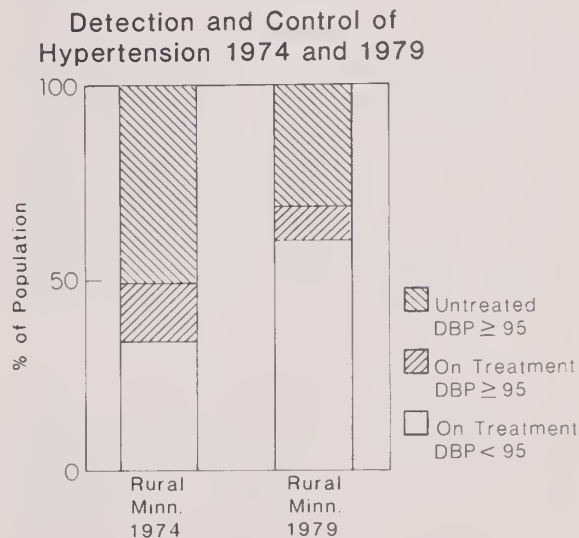


Figure: Blood pressure control in two rural Minnesota populations, 1974 and 1979. Population age 30-64; hypertension present on medications &/or DBP ≥ 95 . Prevalence 1974 = 15.9%, 1979 = 18.1%. The distributions are significantly different $\chi^2 = 22.57$ $p < .001$. Data from 1974 courtesy of Dr. Fred Nobrega, Mayo Clinic.

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Supported by USPHS Grant 1R01-HL 22763 (RVL) and USPHS RCDA 5K04-HL 00287 (DRJ).

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Presented in part at AHA Council on Epidemiology, Annual Meeting, San Diego, CA 1980

approximately 5,000 population each. The counties' populations in 1980 were (M) — 14,941 and (P) — 11,690. They serve as agricultural centers for surrounding farming districts and are approximately 100 miles from the nearest urban area. Both areas are economically stable and dependent mainly on grain and livestock production. Per capita income is similar in both towns, but 10-15% lower than urban Minnesota. The populations of both towns are predominantly white, with small numbers of Native Americans. In 1979, one town (M) and the county were served by eight physicians in a private practice association. The other town (P) and county were served by ten physicians in solo practice or partnership arrangements.

To select a sample, each town was defined by geographic boundaries. The telephone book was utilized to make a directory of occupied dwellings. That directory was supplemented by tax rolls, natural gas records, and water department records. Finally, the towns were "cruised" to eliminate abandoned or destroyed dwellings from the list, to add new or undetected dwellings. All available data about dwellings were compiled and a random order list created to determine sample selection.

Interview

Once a dwelling was selected, an interviewer visited to perform a household enumeration. Age, sex, and relationship of all inhabitants were recorded. Inhabitants were defined as persons living in the dwelling more than six months a year. From the household enumeration, one individual aged 25-64 was randomly selected for detailed interview about health knowledge, attitudes and behaviors. The participant was then invited to attend a local survey center for a more detailed interview and physiologic testing. They were classified as taking anti-hypertensive medications if they so reported treatment for hypertension and brought drugs appropriate for blood pressure control.

Blood Pressure Measurement

Blood pressure was taken in the seated position after five minutes of quiet rest with the arm at the level of the heart. Room temperature was maintained at 65-75° F. A cuff of appropriate size was applied after arm measurement. Blood pressure was recorded twice, using a random-zero device* with a one minute interval between measurements, and the average of the two measures recorded for the first and fifth phases. All technicians were certified under a rigor-

ous training and testing protocol described elsewhere.⁷ Quality control procedures for technicians, sites and equipment were systematically applied.

Each town sample was targeted for 250 adults. Approximately 400 households were contacted in each town to obtain the sample. The entire survey was performed between the months of March and May of 1979.

Data were analyzed using Biomedical Data Package (BMDP) programs on Digital Equipment Corp. 11/70 computer.

Results

The completed survey included 499 participants. The towns did not differ significantly in terms of participation, population demographics and blood pressure characteristics, and are presented together. The composition of the population sample by age and sex is seen in Table 1. The participation rate was 90%

TABLE 1
Hypertension in Rural Minnesota
Population Characteristics

Age	Men	Women
25-44	126	114
45-64	100	159

N = 499

for the home interview, including information about hypertension detection and control. The participation rate was 85% for the complete home interview and clinic visit. The characteristics of those who did not attend clinic indicated that they were similar to the examined population in mean age, sex, education level, history of hypertension, history of cardiovascular disease, medication usage, and habitual physical activity. However, the prevalence of regular cigarette smoking in this group of 40 clinic non-respondents was more than twice that found in the participating group. This non-response of smokers is known and the home interview queries about cigarette smoking behavior may have played a role in their refusing or failing to keep clinic appointments.

Mean systolic and diastolic blood pressures for age and sex categories are shown in Table 2. Mean blood pressures increase with age in men and women. Mean pressures in men are significantly higher than in

TABLE 2
Mean Systolic and Diastolic Blood Pressures

Age	BP	Men	Women
25-44	Syst, mmHg	125.4 ± 11.7	114.0 ± 12.1
	Diast(5), mmHg	75.2 ± 10.2	71.4 ± 10.3
45-64	Syst, mmHg	132.2 ± 14.8	129.9 ± 16.6
	Diast(5), mmHg	83.0 ± 10.0	79.9 ± 10.3

Pressures = Mean ± S.D.

*Hawksley-Gelman, Great Britain.

women, particularly in the younger age group of 25-44. The sex difference is also present in the older age group, although smaller.

The prevalence of controlled, undiscovered, or uncontrolled hypertension was assessed by specified categories: ≥ 160 and/or 95 mmHg and ≥ 140 and/or 90 mmHg. The frequencies of individuals in each category are seen in Table 3. In the younger age range, only 3.5% of the sample had either systolic or diastolic elevations and none had both. In the older age range, 11% of the population were elevated, most by diastolic criteria. Only one participant of the 499 surveyed had diastolic value greater than 115 mmHg.

TABLE 3

Frequency of Elevated Blood Pressure by Age*

BP Category	Ages 25-44		Ages 45-64	
	No.	%	No.	%
BP $\geq 160/95$	0	0.0	4	1.5
SBP ≥ 160 only	1	0.4	7	2.6
DBP ≥ 95 only	7	3.1	19	7.0
Neither elevated	218	96.5	243	89.0
BP $\geq 140/90$	2	0.9	11	4.0
SBP ≥ 140 only	12	5.3	37	13.6
DBP ≥ 90 only	10	4.4	29	10.6
Neither elevated	202	89.4	196	71.8

*Men and women combined

For the criteria of ≥ 140 and/or 90, 11.6% of the younger population and 28.2% of the older were elevated, primarily by systolic pressure criteria.

The status of blood pressure control in these two Minnesota towns is described in Table 4. The overall prevalence of hypertension for this age range is 15.8%. This prevalence includes individuals on medications and those with elevated blood pressures, (≥ 160 and/or 95 mmHg). Of that hypertensive group, more than half (52%) were effectively controlled by blood pressure medications. A smaller percentage was on medication but uncontrolled (13%). Those

aware of elevated pressure but not taking medication were 18%. Hypertension newly discovered by this survey was also low, 18%.

Contemporary blood pressure control is particularly striking when compared to a 1974 study in rural Minnesota,⁸ shown in the Figure. In comparable age groups, that study demonstrated a similar prevalence of hypertension. In 1974, 34% of hypertensives were effectively controlled, approximately half the portion (60%) found here. Hypertensives on medication, uncontrolled, or on no medication, were significantly higher in 1974. Nevertheless, even this 1974 study demonstrates more effective control than one performed in rural Georgia in 1962,⁹ (Table 4). In an urban Minnesota population, studied by methods identical to those described in this study, levels of detection and control in 1980-81 were somewhat better than those we find in rural Minnesota in 1979.*

Knowledge about blood pressure and hypertension were asked of the sample population. In response to an open-ended question about heart attack and stroke, 22% of the population gave hypertension as an important cause. Ninety-two percent of the population recognized that medications "control, but do not cure" hypertension. In questions about hygienic methods of controlling blood pressure, 33% of the population identified weight loss and 23% cited sodium reduction as helpful methods. Finally, 73% of the population agreed that "most people might benefit from lowering of blood pressure."

Discussion

Major changes in the detection and control of high blood pressure have occurred in the past decade. The early demonstrations of efficacy of treatment of moderate and severe hypertension¹⁰ were followed by findings of the Hypertension Detection and Follow-up Study of the benefit of treating mild elevation.¹¹ Concurrently, the National High Blood Pressure Education Program has sought systematically to educate the medical profession and public about the risk of high blood pressure and the benefits of consistent long-term medical treatment.¹ Multiple voluntary community groups launched detection and referral programs. The decade has also been a time of new medications which effectively lower blood pressure with fewer side effects.

These many forces have resulted in marked improvement in the proportion of hypertension detected and effectively controlled, from two to five times the portion observed in the 1960s and early 1970s.^{2,3} However, the majority of these studies were carried out in urban areas while in rural areas, the situation is

*Luepker, R.V., Jacobs, D.R., Gillum, R.F., Folsom, A.R., Taylor, H.L., Prineas, R.J., Blackburn, H.: Population Risk of Cardiovascular Disease: The Minnesota Heart Survey. Submitted to the J Chronic Diseases

TABLE 4

Hypertension Control in Rural Minnesota

Category	Site		
	Rural MN 1979	Rural GA 1962	Urban MN 1980-1
Prevalence*	15.8%	20.3%	13.0%
On medication, controlled†	52%(41)	14%	73%
On medication, uncontrolled	13%(10)	16%	8%
Aware, no medication	18%(14)	70%	9%
Unaware	18%(14)		

*Prevalence = On medications, controlled or BP ≥ 160 and/or 95 mmHg.

† Controlled = On medications, BP $\leq 160/95$ mmHg.

Age 25-64

thought to be different.

Some surveys indicate that hypertension may be more prevalent in rural compared to urban areas.⁵ In addition, the level of detection and control was also less than in urban areas. The differences are commonly attributed to characteristics of rural areas which inhibit the medical control of hypertension. Those characteristics include fewer medical resources with more difficult access, lack of health care insurance, less affluent populations and poor compliance with medical regimens.⁴⁻⁶ These observations are supported by studies which show that rural people are less likely to use preventive services than their urban counterparts.⁴

The present study differs from these more pessimistic perceptions and demonstrates that hypertension is apparently well detected and controlled in these rural Minnesota areas. In fact, residents of these small rural towns appear to be well informed about hypertension and the majority of hypertensives are appropriately treated with good blood pressure control. This is a marked improvement over findings in simi-

lar Minnesota towns in 1974.⁸ However, it is somewhat poorer than the level of hypertension control found in urban Minneapolis/St. Paul in 1980-81. This apparent improvement in hypertension care in rural communities occurred in a pluralistic private practice setting without special clinics or targeted intervention programs.

The prevalence of hypertension now found in these two rural towns is similar to that found in other predominantly white U.S. populations. The prevalence of hypertension in this white rural area is clearly lower than that found in rural populations with high percentages of blacks.⁹

The present study, along with others, indicates that significant progress has apparently been made in the past decade to detect and control high blood pressure. These advances, previously demonstrated in urban areas, seem to have affected at least some rural areas. Nevertheless, a significant proportion of hypertensives are still uncontrolled and undetected and room remains for progress in the control and prevention of hypertension in both rural and urban areas.

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Recognition of Depressive Syndromes, Tricyclics, and the Second Generation Antidepressants

GARY TOLLEFSON, M.D., Ph.D.* AND V. B. TUASON, M.D., F.R.C.P. (C)†

Depression is a multit etiologic syndrome attributable to physical and/or psychological factors. The work-up of a depressive syndrome requires a comprehensive history, physical and mental status examination, and a supporting laboratory battery. Application of the current tricyclic antidepressants and newer "second generation" drugs are discussed.

SOME 15 PERCENT of the population will experience a depressive episode during their lives¹. The general practitioner may be selected for an initial contact by up to 88 percent of these individuals². The majority of persons with chronic or recurrent depressive illness will continue to receive psychiatric treatment from their family physician^{3,4}. Depression is believed to encompass 6-23 percent of primary care patients visits. The high rate of exacerbation of depressions probably is responsible for 30 percent of annual patient visits^{5,6}. The actual prevalence varies depending on the physicians' ability to set criteria for diagnosis.

Current Theories

Current thinking places less emphasis on the endogenous or reactive distinction⁷. A major depressive episode (Table 1) is related to a dysequilibrium of central neurotransmission, and may be consequent to a variety of genetic to environmental inputs. Depressive symptoms have both anatomic correlates and apparent neurotransmitter modulation: (disordered sleep (locus cereleus/raphe nucleus), appetite (hypothalamus), memory (hippocampus), etc. There are four supporting confirmations for the biogenic hypothesis. The depressed patient exhibits abnormalities of catecholamine (norepinephrine) or indoleamine (serotonin) turnover when contrasted with non-depressed controls⁸. Secondly, drugs that influence central catecholamines (e.g., reserpine) may induce iatrogenic mood disorders⁹. Thirdly, the patient with a major depression may manifest idiosyncracies of the hypophyseal-pituitary-adrenal axis (e.g., dexamethasone suppression response) or thyroid (e.g., thyroid-releasing hormone challenge response)¹⁰.

Fourth, the current array of antidepressant therapies block reuptake, influence synthesis and degradation, alter the density of receptor sites, and reduce receptor affinity (attraction) for norepinephrine (NE) and/or serotonin (5-HT)¹¹.

Despite this biochemical hypothesis, depression should be recognized as a syndrome. Secondary depressions may be due to a broad array of physical (Table Two) and/or other primary psychiatric diagnoses complicating the initial evaluation. A comprehensive work-up requires a medical history, physical and mental status examination, and supporting laboratory examinations. Careful initial evaluation pays off in avoiding therapeutic futility.

Recognition

Chief complaints of depressed patients are varied. The primary physician may miss the depression if it is masked by a physical complaint¹². Depression should be suspect where physical complaints are without a demonstrable organic basis, episodic, temporally

TABLE 1

Diagnostic Criteria for a Major Depressive Episode

- A. Dysphoric mood or loss of interest or pleasure in all or almost all usual pastimes and activities.
(The dysphoric mood is characterized by symptoms such as depression, sadness, hopelessness, irritability.)
- B. At least four of the following symptoms have been present nearly every day for a period of at least two weeks:
 1. poor appetite or significant weight loss
 2. insomnia or hypersomnia
 3. psychomotor agitation or retardation
 4. loss of interest or pleasure in usual activities (anhedonia)
 5. loss of energy, undue fatigue
 6. feelings of worthlessness, self-reproach, or excessive or inappropriate guilt
 7. complaints or evidence of diminished ability to think or concentrate
 8. recurrent thoughts of death, suicide, or their equivalent.

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linked to psychological distress and psychological problems are minimized by the patient¹³. Potential depressive equivalents are: (1) somatic complaints without organic explanation, (2) cognitive decline (pseudodementia), (3) substance abuse, or (4) anti-social behavior. The past psychiatric history is important in providing past antidepressant response (to predict current treatment), number of past recurrences (the need for maintenance drug therapy), previous attempts of suicide (heightened risk or recidivism), and differential diagnosis¹⁴.

Suicide may complicate one of every eight major depressions. Suicide victims frequently consult their primary physician shortly before an attempt (18 percent within 24 hours) under the guise of a somatic complaint^{15,16}. Rejecting the reluctance to pursue an appropriate line of questioning gives the primary physician the opportunity to identify and manage the depressed suicidal patient^{16,17}.

Table Two shows somatic disease may present with a mood change^{13,18-24}. A complete history, detailed physical and neurologic examination, and a battery of laboratory tests would be expected to identify unrecognized medical illness in more than 90 percent of cases²¹. Singularly a comprehensive physical uncovered 40 of the 78 primary medical diseases encountered. An abbreviated physical examination (re-

quiring on the average of 16.9 minutes) identified 8.2 physical findings per subject (5.3 were previously unrecognized) among 75 psychiatric patients^{23,24}. Forty-two percent of these findings led to the consideration of a medical cause for the psychiatric syndrome. Amongst 2,090 psychiatric clinic referrals one third had a concurrent medical diagnosis unrecognized by their referring primary physician²². These observations certainly underlie the utility of the physical examination.

A drug history is essential in the evaluation of depression. Upwards of 31 percent of primary care patients will have recently used either a prescription or over the counter drug prior to seeing their physician²⁵. In a recent study 43 percent of depressed individuals had recently used at least one drug known to be capable of mood alteration²². A number of common nonpsychotropic drugs may induce psychological symptoms²⁶.

Management

Patients with a major depressive disorder should be considered as candidates for either the conventional tricyclics (TCA) or the newer second generation antidepressants. Major depression represents a dys-equilibrium of central catecholamines (NE) or indolamines (5-HT). Antidepressants variably operate on one or both of these systems. Cerebrospinal fluid determinations of NE and 5-HT breakdown products (MHPG, 5-HIAA respectively) imply a biochemical dichotomy may exist within major depression⁸. If an agent with predominant NE effects has been unsuccessful, try a 5-HT acting antidepressant or visa versa. Drug receptor properties are summarized in Table 3. These should be understood as yet preliminary.

The clinician will encounter one of four potential situations as summarized in the Figure. A common therapeutic failure is inadequate dosing to achieve a therapeutic concentration of the antidepressant. Doses in excess of 150 mg/day in many healthy young adults may be required. Dosing in the older patient (or the patient with hepatic dysfunction) is often approximately one-half of this standard practice. In a pediatric setting with a tricyclic such as imipramine, a maximum of 2.5 mg/kg/day is recommended. Plasma determinations can provide a better estimate of available drug than the mg dose. Therapeutic drug monitoring is often indicated due to a 30-fold variation in TCA first pass metabolism. When issues of compliance, drug interaction, enhanced metabolism, poor absorption, hepatic or renal disease, or abnormal plasma proteins (alpha₂: albumin) are suspect³⁰.

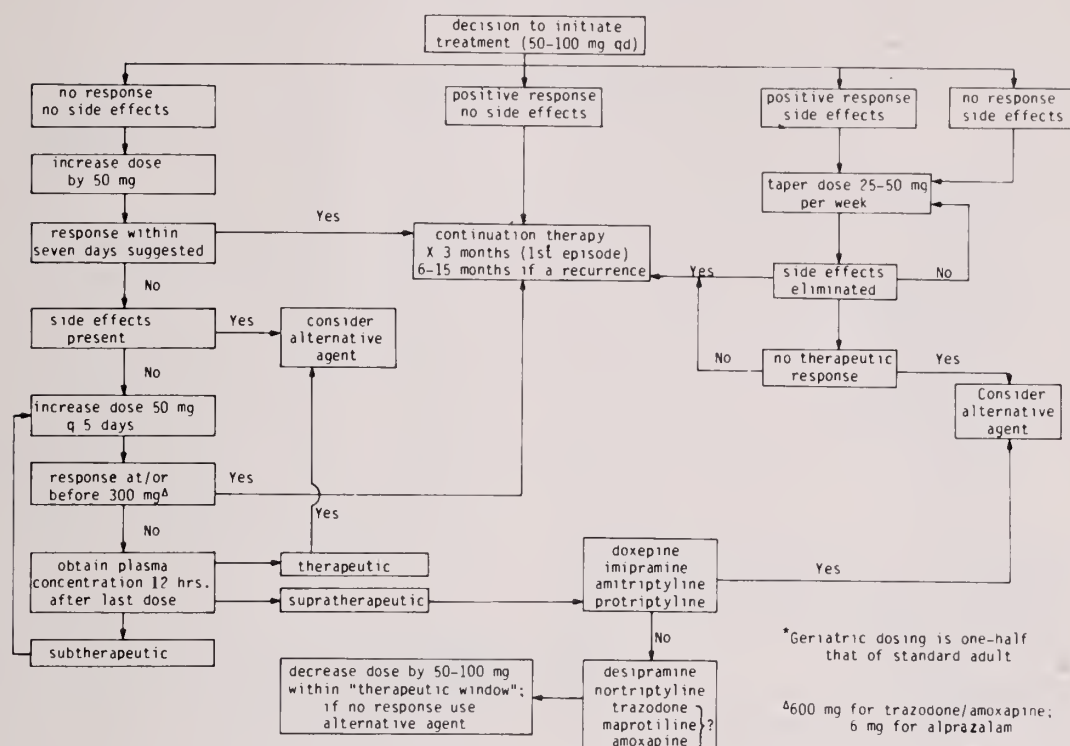
TABLE 2

Medical Conditions Presenting With Depression

Pituitary insufficiency
Hypothyroidism;
Adrenal excess or insufficiency;
Diabetes mellitus;
Hyperparathyroidism
Hypoglycemia
B₁₂ and/or Folic acid deficiency
Pelagra
Electrolyte deficiencies
Wilson's disease
Various systemic malignancies producing paracrine products:
 bronchogenic (ACTH);
 lymphoma (PTH);
 hepatoma (insulin);
 lung (IADH); etc.
Collagen vascular disease (e.g., lupus cerebritis)
CNS impairment: e.g., tumor, demyelination, uremia, hypoxia, hepatic encephalopathy, etc.
Infectious:
a) intracranial;
b) post-acute phase-viral pneumonia, hepatitis, viral mononucleosis, etc.
Drug-induced depression:
e.g., steroids, centrally active antihypertensives, narcotics, anticonvulsants, antineoplastics, dopamine agonists, prostaglandin inhibitors, etc.

Adapted from: Hall, RCW, Popkin, MK: Psychological symptoms of physical origin. *The Female Patient*, pp. 43-46, Oct. 1977 (by permission).

Algorithm in Using an Antidepressant*



Figure

Side Effects

Most TCA side effects are due to antagonism of histaminic, cholinergic, and alpha-adrenergic receptors; toxic management is largely supportive³¹. Adverse effects are often dose dependent and may imply supratherapeutic plasma concentrations. The rank ordering of receptor affinities by individual drug is summarized in Table 3.

Some of these diverse properties offer utility in the management of corollary symptoms of depression. Histamine-1 blocking correlates with sedative and appetite-enhancing effects. The antihistaminic-2 blocking properties of the conventional TCA's (e.g., doxepin) may approach that of cimetidine in blocking gastric secretion³². The anticholinergic effects of the tertiary TCA's are often significant and awareness for either peripheral or central anticholinergic sequelae is recommended. Mild anticholinergic effects, however, can often diminish complaints associated with "functional bowel." Therapeutic concentrations of several TCA's may also be beneficial in chronic pain disorders³³, their mechanisms are likely multiple. Prescreening for orthostatic hypotension (alpha 1, 2 blockade) often identifies a predisposed individual

e.g., diabetic; an antidepressant with less alpha-adrenergic affinity is indicated.

Five potential mechanisms for the cardiovascular (C-V) effects of the antidepressants are summarized in Table 4. Several studies implicate toxic concentrations in the genesis of many C-V complications. Therapeutic serum concentrations may not accurately reflect cardiac concentration³⁴. Antidepressants concentrate within cardiac tissues and cardiac/plasma concentration ratios may exceed 200³⁵. Thus, idiosyncrasies of drug pharmacokinetics and dynamics are significant intersubject variables in the genesis of adverse drug reactions. Pretreatment and periodic electrocardiographic monitoring are advised. The patient with pretreatment abnormalities merits special attention. TCA conduction disorders are generally distal to the Bundle of His. Ventricular arrhythmias may increase or diminish with a TCA. A prolonged QRS complex reflects toxicity (if > .10 associated with plasma concentrations exceeding 1000 ng)³⁶.

Second Generation Antidepressants

Despite the major impact the conventional TCA's on the management of major depression, a drawback

TABLE 3
Antidepressants Properties

	Ne	5-Ht	DA Δ	GABA	ACh Δ	H _{1,2} Δ	alpha adrenergic	
							1	2
I. Tricyclics								
a. dimethylated								
amitriptyline	0	+++	0	0	+++	+++	+++	+++
doxepin			0	0	+++	+++	+++	++
imipramine	++	++	0	0	+++	++	++	+
monomethylated								
desipramine	+++	0	0	0	++	+	++	+
nortriptyline	+	++	0	0	++	++	++	++
protriptyline			0	0	+++	+	++	+
trimipramine	++	0	0	0	++	+++	+++	++
II. Second Generation								
maprotiline	+++	0	0	0	+	++	+(?)	+(?)
trazodone*	\pm	+++	\pm	0	0	+	+	+(?)
amoxepine	++	0	++	0	+	++	+(?)	+(?)
alprazolam**	\pm	0	0	++	0	0(?)	0(?)	0(?)

Δ antagonist effect

*dose equivalence is one-half of standard TCA (maximum 600 mg day)

**not yet FDA approved for depression; dose range 0.5-6.0 mg day

(?) = not well established

NE = norepinephrine

5-HT = serotonin

DA = dopamine

GABA = gamma-amino-butyric acid

ACh = acetylcholine

H_{1,2} = histamine 1,2

alpha-NE = alpha norepinephrine

TABLE 4
The Potential Cardiovascular Activities
Associated with Antidepressant Therapy +

Category	Mechanism	C-V Outcome
I. type — 1 antiarrhythmic ("quinidine-like")	an interference with the transmembrane Na-K carrier	1) contractility 2) Q-T duration 3) QRS duration
II. anticholinergic	a shortened diastolic depolarization time increasing the S-A node's rate of impulse formation	1) sinus tachycardia/bradycardia 2) junctional rhythm
III. reuptake blockade of amines (norepinephrine; serotonin)	an increase in available synaptic indole or catecholamines potentiating pressor effects	1) sinus tachycardia/bradycardia 2) P-R interval 3) AV junctional rhythm 4) AV dissociation 5) ventricular arrhythmia 6) hypertension
IV. inhibition of monoamine oxidase*	indirect accumulation of sympathomimetic amines	1) postural hypotension 2) cardiac output 3) peripheral resistance 4) hypertension
V. alpha-adrenergic blockade	blockade of sympathomimetic amine activity directly at the adreno receptor	1) tachycardia 2) postural hypotension 3) cardiac output 4) peripheral vascular resistance

+ The above table is a modification of Burgess.

*work of Sullivan, et al.

has been the side-effect profile and delayed onset of action. The second generation drugs represent a class that is equally effective, perhaps more rapid acting, and less prone to induce typical side effects^{37,38}. They are subtyped as tetracyclic (maprotiline), bicyclic (trazodone), tricyclic with dopamine blocking properties (amoxapine), and a triazolobenzodiazepine (alprazolam).

Maprotiline (Ludiomil^R) is a derivative of the dibenzo-bicyclo-octadiene series and is distinct from the conventional TCA by an ethylene bridge across its central ring forming a tetracyclic configuration. Blockade of amine reuptake is relatively specific to NE³. A possible therapeutic window (200-300 ng/ml) exists, but interindividual variances are wide⁴⁰. No significant pharmacokinetic difference in blood concentration emerge when given singly or in multiple daily dosings⁴¹. Drug half-life is between 24-48 hours. Maprotiline has a lower incidence of anticholinergic and cardiovascular sequelae^{42,43}. Reports of intravenous administration during venous and retrograde arterial catheterization⁴⁴, management of post infarct anxiety and depression⁴⁵, and beneficial effect upon heart rate⁴⁶ enhance its margin of safety amongst C-V patients. Freedom from side effects is of utility in treating geriatric depression. A possible reduction in the seizure threshold implies caution in seizure-prone patients during initiation of treatment. Large dose increases (>150 mg.) are discouraged. Despite extensive prescriptions only a limited number of deliberate or accidental intoxications are present in the literature⁴⁷.

Trazodone (Desyrel^R) is a novel triazolopyridine derivative that selectively inhibits 5-HT reuptake. It manifests minimal anticholinergic, hypotensive, or cardiovascular activity⁴⁸. Sedation is a primary side effect deriving from its anti-histaminic property. Administration of the majority of dose at bedtime is advised. Efficacy is comparable with the conventional TCAs⁴⁹. Trazodone is useful in symptomatic clusters of agitation, insomnia, and somatization³⁷. Serum half-life is 4.4-77.5 hours. This shorter half-life is relatively unique and may dictate bid. or tid. dosing. Usual therapeutic doses are 100-300 mg/day although a range from 50 mg to 600 mg may be required. Sedation that persists beyond the initial few treatment days requires a dose reduction. The toxicity profile appears highly favorable.

Amoxapine (Ascendin^R) has a chemical structure and activity similar to the neuroleptic loxitan and TCA imipramine. Post-synaptic dopamine receptor blockade and reuptake blockade of NE are metabolite

properties. The parent drug is rapidly absorbed reaching peak activity in some 90 minutes. Half-life (OH-amoxapine) is approximately 30 hours with little difference between single and multiple daily dosings. The majority of patients respond to 200-300 mg/day after initiating at 100 mg/day. While of apparent clinical value in major depression⁵⁰, it exhibits a similar side effect profile to the antipsychotics including parkinsonism, akathisia, and dystonia. Chronic administration may also carry the potential risk of tardive dyskinesia. Mild to moderate anticholinergic effects and a favorable C-V profile are reported. An apparent "therapeutic window" exists between 200-400 ng/ml. The dual antidepressant/antipsychotic profile implies utility in patients with psychotic depression⁵¹ where delusions/hallucinations are tied to themes of personal guilt or punishment (mood-congruent).

Alprazolam (Xanax^R) is not yet FDA approved as an antidepressant. It is a triazolobenzodiazepine exhibiting specific anxiolytic (displaces ³H-diazepam binding) and putative antidepressant (blockade of reserpine-induced models of NE depletion) activities⁵³. These dual properties underscore its utility in mixed anxiety-depression. Standard doses range from 0.5 to 6.0 mg daily. Experience of the author reveals efficacy in obsessive-compulsive disorder, post traumatic stress syndrome, and chronic dysthymia ("Neurotic depression"). The latter are frequently prone to somatization, chronic unhappiness/displeasure, and paucity of rewarding interests. The onset of action may exceed imipramine⁴⁸ with equivalent antidepressant efficacy and fewer side effects⁵⁴. The relative absence of anticholinergic potency and minimal lethality risk are similar to trazodone. Brief clinical trials (e.g. 6 weeks) are advisable to minimize the chance of physiologic dependency.

Conclusion

The value of antidepressants in the treatment of affective disorders is unquestioned. Depression is a syndrome requiring a differential diagnosis. Once the physician has elected to initiate treatment, several strategies are emphasized. Utilization of therapeutic dosages, frequent monitoring of side effects and compliance duration of therapy, logical second choice strategy, employment of drug levels, and consideration of nondrug therapies are recommended. In a primary care setting⁵⁵ the duration of antidepressant treatment was noted to range from three days to four months with a mean of 2.7 follow-up visits. Patients subjectively reporting a positive response to their

TCA have mean dosage and treatment length of 112 mg and 5.3 weeks respectively. This compared to 75 mg and 1.1 weeks amongst nonresponders ($p < .05$).

Treatment should continue for at least three (first episode) to six-15 months (multiple recurrences). Poor compliance or physician's discontinuation of drug within three months are associated with rates of relapse exceeding 50 percent⁵⁶. After successful continuation therapy a progressive dosage reduction is suggested e.g., 25-50 mg every two weeks. If symptoms reemerge, the previous maintenance dosage should be reinstituted for another three month interval before a second attempt at discontinuation. Where frequent recurrences are encountered, long-term prophylactic management is both safe and effective. The acute treatment dose can often be reduced during maintenance. During a recurrence the clinician should evaluate compliance, a change in psychosocial stressors, the addition of other drugs that enhance antidepressant metabolism, or emergence of physical disease (new or previously unrecognized).

The second generation antidepressants represent a valuable therapeutic option. These agents offer special promise for depressions in the medically ill,

(e.g., cardiovascular patient), the aged, or those refractory to conventional TCA's. Experience with at least two classes of antidepressant is essential based upon the contemporary theories of affective disorders e.g., maprotiline (NE reuptake blocker) and trazodone (5-HT reuptake blocker). Individualized dosing should start conservatively (e.g., 50-75 mg), be titrated to reduce target symptoms (e.g., sleep), and avoid side effects. If one treatment course is discontinued (due to side effects, lack of response despite therapeutic plasma levels, etc.) initiation of a biochemical counterpart is advised.

The advent of psychotropic drugs has facilitated treatment of affective disorders within the primary care setting. However, a controversy in physicians' prescribing patterns ensued²⁵. Enhanced awareness of current concepts in affective disorders, as well as, the array of antidepressants currently available should be a main focus in continuing medical education.

Acknowledgment

The author wishes to acknowledge the support of the St. Paul-Ramsey Medical Education and Research Foundation and CIBA-GEIGY Corporation. The author further wishes to thank Marilu La Voie for her secretarial assistance in preparation of this manuscript.

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POSITIONS AVAILABLE . . . For qualified physicians in Divisions of Family Practice and Psychiatry — Fergus Falls State Hospital — located in the Heart of Minnesota's 10,000 Lakes, Fergus Falls is a progressive community and provides an excellent health care setting. Consultant staff presently includes 9 family practitioners, 7 psychiatrists, a neurologist, physiatrist, pediatrician, 2 pathologists, and a surgeon — licensed for 206 chemically dependent patients, 135 mentally ill patients, and 256 mentally retarded residents, Fergus Falls State Hospital provides the only adolescent drug and dependency treatment program in the state system. For more information contact — Richard C. Baker, M.D., Medical Director, Fergus Falls State Hospital, Box 157, Fergus Falls, MN 56537 (218) 739-7396.

SOUTHERN CALIFORNIA — We are seeking experienced specialists and general practitioners for our facilities in Los Angeles and Orange Counties. Located in close proximity to major teaching centers, we offer the opportunity of continued professional development and rewarding clinical practice in association with 350 full-time physicians. Compensation and benefits are excellent including paid vacation, educational leave, sick leave, and retirement; insurances included are malpractice, life, disability, medical and dental. Send CV to: Professional Placement, INA and Ross Loos Healthplans, 700 N. Brand Blvd., Suite 500, Glendale, CA 91203.

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ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

WANTED: Complete line of family practice equipment for solo practitioner. Must be in good, excellent condition. Please send complete listing including price to R. O. Schroepel, M.D. 1100 E. Broadway, Redwood Falls, MN 56283.

INTERNIST-CARDIOLOGIST, GENERAL SURGEON, ENT, AND NEUROLOGIST — specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

LAND FOR SALE: 40, 80, 140 acre parcels in Carlton County. Road access, high land, wooded, \$200 to \$300 per acre. Write Charlie Gronquist, M.D., 1210 Wilson Avenue, Cloquet, MN 55720, or call at 218-879-4813.

FAMILY PRACTICE PHYSICIAN for rural Minnesota. A progressive network of Minnesota clinics now has opportunities for family practice physicians in Western Minnesota. These positions offer the highest level of creative health care and a secure financial future in rural settings. High quality of life. Many outdoor recreational opportunities, winter and summer. Call Willmar Medical Clinic, 612-231-5000, Dr. P. Olson.

NEEDED IMMEDIATELY, physicians for General Practice, Internal Medicine specialists and pediatrician for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D., at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

THE BOYNTON HEALTH SERVICE, University of Minnesota, serving a population of 40,000 students, faculty and staff on the Twin Cities campus, has a physician opening. This comprehensive health care facility has a staff of 35 full time equivalent physicians, 5 nurse practitioners and 15 registered nurses. The position requires an M.D., B/C-B/E in a primary care field, and licensed in Minnesota. Must have a broad range of medical abilities and relate well to health-conscious young adult patients. Experience or interest in sports or emergency medicine and psychological aspects of health desired. The physician will serve as the case manager for a set of established patients. Specialty consultations available on-site. Continuing medical education, quality assurance review and clinic accreditation provided. Salary competitive and commensurate with training and experience. Regular hours and excellent fringe benefits including paid professional liability insurance. Position available immediately. Please send resume by June 15, 1984 to Donald Severson, M.D., Chair, Physician Search Committee, University of Minnesota, Boynton Health Service, 410 Church Street S.E., Minneapolis, Minnesota 55455. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities.

FAMILY PRACTICE physician needed to join five Family Practitioners and a General Surgeon. Immediate opportunity in west central Wisconsin near La Crosse. \$45,000 first year guarantee plus incentive. Excellent recreational area. Community Hospital. Send CV to: Jerrold L. Kamp, Administrator, P.O. Box 250, Sparta, WI 54656; or phone (608) 269-6731.

(Continued to page 354)

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(Continued from page 353)

PRIMARY CARE PHYSICIANS are needed for a fascinating opportunity in a hospital — sponsored exciting and innovative service within the Minneapolis/St. Paul Metropolitan area. Excellent remuneration including guarantee. Write: Minnesota Medicine, 739, 2221-University Ave. S.E., Suite 400, Minneapolis, 55414.

GROUP OR SOLO practice available in a northern Minnesota rural community. National forests, skiing, excellent fishing and hunting are easily accessible. Present physician averages 20-30 patients per day. Financial incentive package includes interview and relocation expenses, income guarantee, and paid CME leave and coverage. For additional information please call or write: Dan Olphie, Hospital Corporation of America, P.O. Box 1575, Nashville, TN 37202, 1-800-251-1537.

ORTHOPAEDIC SURGEON: Cambridge, Minnesota: 45 minutes from downtown Twin Cities: beautiful recreational area: good schools: new hospital: excellent opportunity for board certified orthopaedic surgeon to join 17-man multispecialty group, including one existing orthopaedic surgeon: 1st year salary +; 2nd year partnership available: please contact Administrator Al Nelson at 612/689-1411, Minneapolis 612/434-6622, or Home Phone 612/396-2504."

PRACTICE FOR SALE — Southern California family medical practice for sale. Idyllic location near ocean in beautiful Santa Barbara. Gross \$150,000. Physician owner must leave country for family reasons. Call 805-967-9668.

MEDICAL SPECIALTY GROUP desires to sublease approx. 900 sq. ft. of new office near Maplewood mall. Will have own entrance/waiting room. Includes 3 exam rooms/x-ray facilities. If interested, call 221-9726.

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WANTED: BOARDED FAMILY Practice Physician for a physicians' group located in Hutchinson, Minnesota, sixty miles from the Twin Cities. Hospital privileges available, competitive salary, and professional growth opportunities. Please send resume to: Hutchinson Medical Center, 1091 Highway 15 South, Hutchinson, MN 55350.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Currently recruiting for Board Eligible or Board Certified Internist, preferably with subspecialty training and also a Board Eligible or Board Certified Ophthalmologist. Contact Administrator at (218) 751-1280 Bemidji, Minnesota.

FAMILY PHYSICIANS NEEDED, Full spectrum (includes OB/Peds). Urban American Indian Clinic. Contact Norine Smith, 1315 East 24th Street, Minneapolis, MN 55404. (612) 721-7425.

WANTED: Boarded Family Practice Physician for a physicians' group located in Hutchinson, Minnesota, sixty miles from the Twin Cities. Hospital privileges available, competitive salary, and professional growth opportunities. Please send resume to: Hutchinson Medical Center, 1091 Highway 15 South, Hutchinson, MN 55350.

ONE OF THE LEADING health care organizations in the Minneapolis/Saint Paul metropolitan area is seeking an experienced psychiatrist as Head of the Department of Mental Health and Chemical Dependency. This department consists of 30 staff members responsible for providing adult and child mental health and chemical dependency services. Candidates must be board certified. Administrative experience required. Send curriculum vitae to Post Office Box 14805, University Station, Minneapolis, Minnesota 55414.

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FAMILY PHYSICIAN, INTERNIST, SOUTHWESTERN MINNESOTA Rural Primary Care Group — 12 physicians (8 Family Physicians, Internist, 2 General Surgeons, Pediatrician) in an Agricultural-Commercial-University town of 11,000 invites residency trained/board certified Family Physician and Internist to join progressive patient-oriented practice in a recently built hospital and ambulatory care center. **USUAL CHAMBER OF COMMERCE CLAIMS NEARLY TRUE HERE!** C. P. Martin, M.D., Doctors' Plaza, Marshall, MN 56258; Phone: (507) 532-9631.

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(continued on page 356)

(Continued from page 355)

MULTI-SPECIALTY GROUP (120 member) seeks residency trained family practitioner to join eight colleagues in large growing practice; located in upper Midwest university metropolitan area of 110,000; 35 minutes from superb lake region; associated with medical school; outstanding income; will pay travel expenses for physician and spouse for interview. Contact John Paulsen, Box 2067, Fargo, ND 58123, (701) 237-2000.

FAMILY PRACTICE PHYSICIAN NEEDED. Growing practice is seeking a third physician to join its staff. Salary is competitive and negotiable with full fringe benefit package. Located in quiet woods and waters of beautiful Lake Vermilion. Call collect: (218) 666-5959, ext. 38. Write Cook Area Health Services, Ashawa Clinic Building, Cook, MN 55723

OB/GYN PRACTICE in southern Minnesota city for sale. Buyer should be board eligible. Community offers all specialties and appeal of metropolitan living yet convenience of mid-size city. Easy terms, negotiable, interest free. Current physician wishes to remain confidential. Please direct inquiries to Laura Grygar, M.M.S.C., 2221 University Ave. S.E., Minneapolis, MN 55414 (612) 378-0305.

FAMILY PRACTICE PHYSICIAN — Wanted to join a 16 physician multi-specialty group in Robbinsdale, Minnesota, located next to North Memorial Medical Center. Fringe benefits are excellent and salary is very competitive. A second satellite office is also located in Maple Grove. The clinic is also a provider for three HMOs. Please contact clinic manager at North Clinic, P.A., 3210 Lowry Avenue North, Robbinsdale, Minnesota 55422, telephone (612) 588-4625.

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References: 1. Kales J et al: *Clin Pharmacol Ther* 12:691-697, Jul-Aug 1971. 2. Kales A et al: *Clin Pharmacol Ther* 18:356-363, Sep 1975. 3. Kales A et al: *Clin Pharmacol Ther* 19:576-583, May 1976. 4. Kales A et al: *Clin Pharmacol Ther* 32:781-788, Dec 1982. 5. Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc* 27:541-546, Dec 1979. 6. Kales A, Kales JD: *J Clin Pharmacol* 3:140-150, Apr 1983. 7. Greenblatt DJ, Allen MD, Shader RI: *Clin Pharmacol Ther* 21:355-361, Mar 1977. 8. Zimmerman AM: *Curr Ther Res* 13:18-22, Jan 1971. 9. Amrein R et al: *Drugs Exp Clin Res* 9(1):85-99, 1983. 10. Monti JM: *Methods Find Exp Clin Pharmacol* 3:303-326, May 1981. 11. Greenblatt DJ et al: *Sleep* 5(Suppl 1):S18-S27, 1982. 12. Kales A et al: *Pharmacology* 26:121-137, 1983.

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Before prescribing, please consult complete product information, a summary of which follows:

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Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

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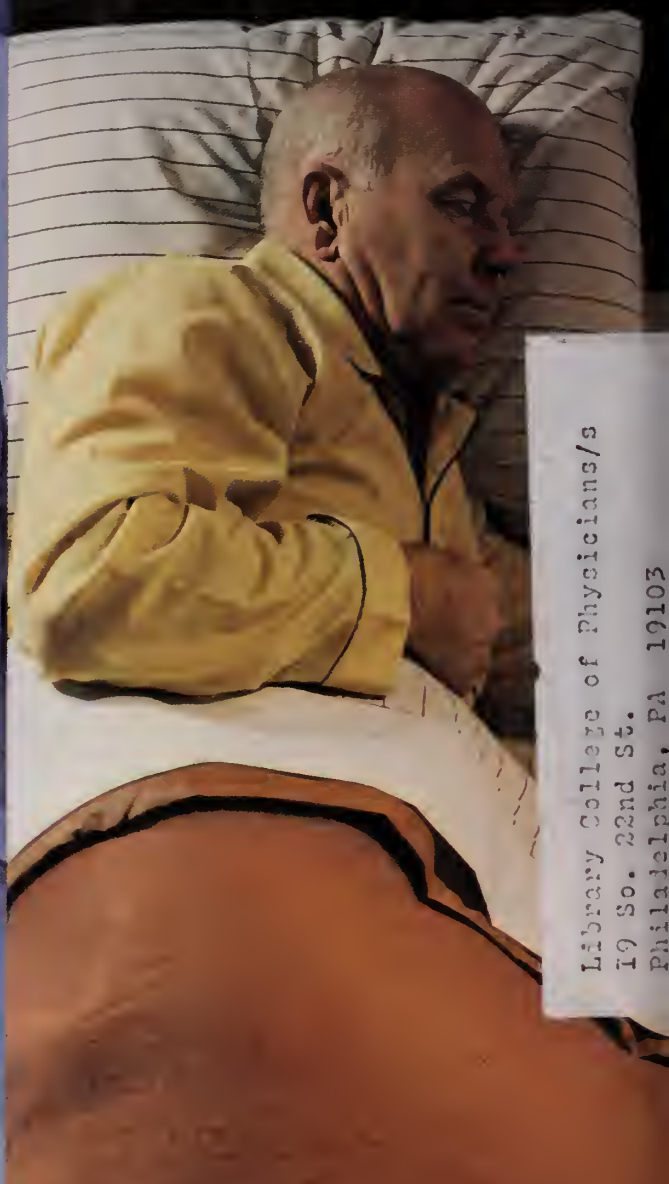
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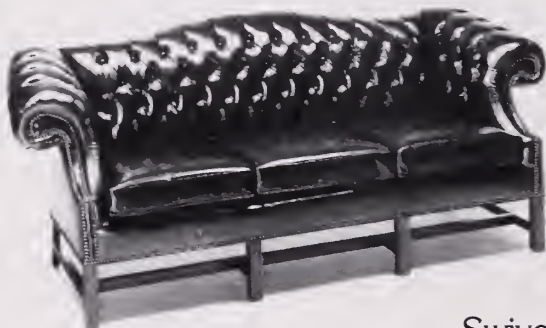
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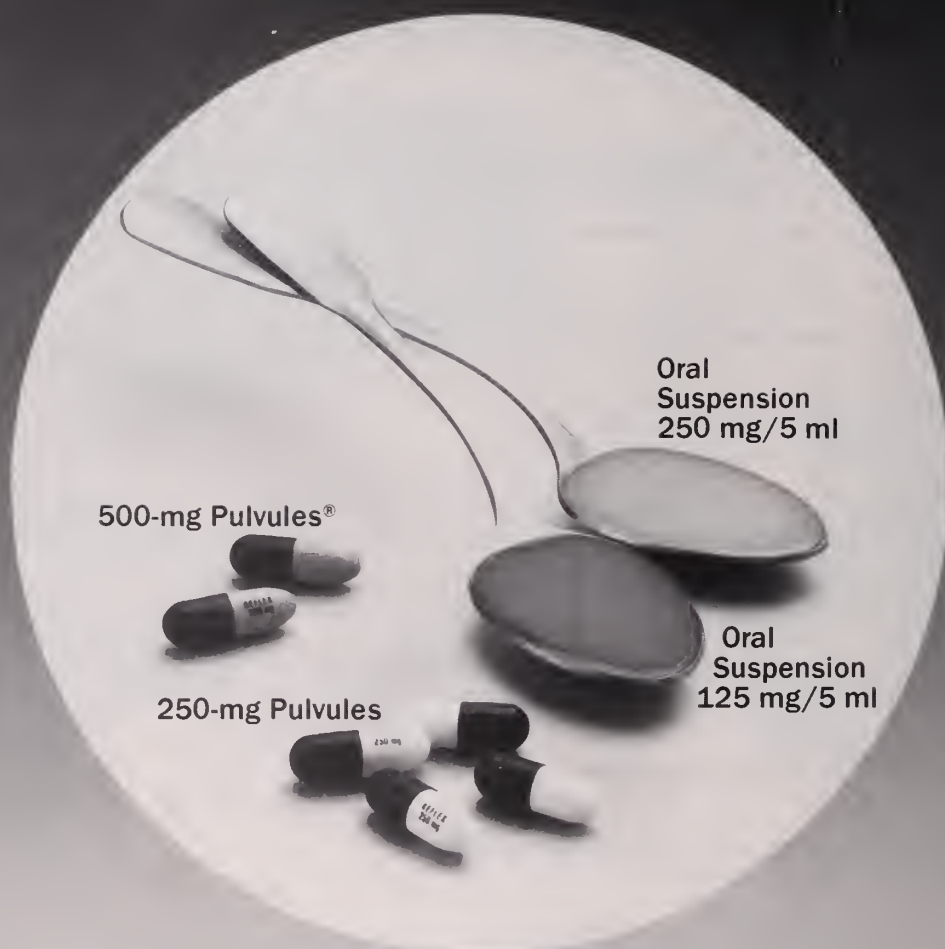
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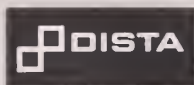
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All manuscripts will be edited and stylized to conform to the format used in MINNESOTA MEDICINE.

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Annual Subscription — \$18.00. Single copies — \$2.00
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President's Letter



"Bioethical Lag"

With the explosion of new medical technology and the wide spread acceptance of new payment modes, a bioethical lag has developed.

Ethical dilemmas are increasing. Too often ethical opinions and decisions are being made in the political arena, on editorial pages, or in corporate board rooms. As with other medical decisions, third parties have inserted themselves between the patient and his/her physician. Physicians need to regain the leadership role in biomedical ethics. The MMA public opinion poll taken in March, 1984, demonstrated a public perception believing physicians were sweeping ethical problems under the rug.

Pope John Paul II stated, "It is evident that the unprecedented and rapid progress of medical science carries with it the need for frequent reassessment —."¹

Ethics have been defined as "pertaining to or dealing with morals or principles of morality; pertaining to right or wrong. The standards of a profession."

The AMA manual on ethics states that the ethical standards of professional conduct and responsibility may exceed but are never less than, nor contrary to, those required by law.

The Judicial Council of AMA has done an excellent job of updating medical ethics. Our own Dr. Ron Cranford has been a leader in setting up workable guidelines for brain death. The MMA Committee on Ethics is struggling with conflicts created by new payment modes. The President's Commission on Ethics has published an impressive set of documents.

Many ethical dilemmas remain and will continue to change; others will rise due to the dynamic nature of the problem.

Consider:

Organ Transplants

Who qualifies to receive a kidney, liver, or heart? Who is refused? How many Barney Clarks can we afford at \$250,000.00 a copy? Should organs be brokered? Since there is an organ shortage should they go to the highest bidder? William B. Swartz, M.D., points out in his book "The Painful Prescription", that the British physician may simply not tell a patient that dialysis is not available or go by a general rule that people older than 55 are "a bit crumbly" and not suitable for transplantation.

Fertilization

This area creates some of our greatest dilemmas. Abortion — a continuing area of conflict.

But how about:

Fetal sex selection? Single parenting? Homosexual parenting? Eugenics? Who is responsible for the imperfect product of surrogate parenting? Genetic engineering?

PRESIDENT'S LETTER

Intrauterine operations? Human embryo transfer for profit? Human sperm/animal ova fertilization experimentation? Should an alcoholic pregnant woman be incarcerated to prevent the fetal alcohol syndrome in her child? Should a narcotic dependent pregnant mother be detained to prevent fetal addiction?

Use of Intensive Care

Do we need criteria for admission and discharge?

David A. Smith, M.D., wrote in *Pennsylvania Medicine* under the title "Finite Resources, Infinite Demand" — "who will receive intensive care will be an easy decision, who will not will be the difficult one."

Care for the Handicapped

Is it proper for the President or an unknown lay person to insert himself/herself between a physician and the infant's parents and dictate treatment?

Should a hospital force feed a woman with severe cerebral palsy and arthritis who chooses otherwise?

There must be a middle ground between resources that would be wasted treating the anencephalic monster and those resources used to treat some Down's infants that have brought joy to many families.

Death and Dying

Didn't we handle the Karen Quinlans better before the courts inserted themselves between us and our patients? How about the chill factor sent through the medical community when two California M.D.s decided to terminate care of a terminally ill patient — then faced murder charges.

Socio Economic Issue

A useful drug such as Bendectin was removed from the market because of constant litigation preventing its use in patients that must now suffer the discomfort of morning sickness.

With DRGs, the high cost of organ transplants and the corporate practice of medicine, rationing of health care is here.

Physicians now face the dilemma of trying to provide quality of care with inadequate resources.

Where Do We Go from Here?

I would be presumptuous to say I had the answers to these problems.

I urge you to review the Hippocratic Oath with its historic elegance.

I urge you to review the AMA's principle of medical ethics.

I offer the following for your consideration:

1. We should not be an active instrument of death, that is, there should be no euthanasia. We must not play God. Governor Richard Lamm of Colorado has helped bring discussion of these issues by such statements as: "Medical Science is replacing God in deciding when we die. People have the right to die without medical science intervening." (Time, April 9, 1984)
2. Neither we nor our patients are immortal; there is a time for death. Perhaps we need a better understanding of when we should prolong life but not prolong death.
3. Where other criteria fail, we should have a presumption in favor of life.
4. Our resources are finite and must be allocated. Section 2.03 of the AMA Principle of Medical Ethics states that "limited health care resources should be allocated efficiently and on a basis of fair, acceptable and humanitarian criteria. Priority should be given to persons who are most likely to be treated successfully or have long term benefits. Social worth should not be a criteria." Thus, we must triage our medical care resources. As with the battlefield definition of

PRESIDENT'S LETTER

“sorting out” the minor injuries to those in need of urgent or emergency care, to those who are alive but so severely damaged that even with great expenditure of time and resources, the chances of reasonably good results are remote. This guideline of reasonableness seems to be helpful in the decision making process.

Ethicist Anne Neale, Vice President for Bon Secours Health System in Baltimore, Maryland, feels we are spending vast amounts of money on acute care, hi-tech medicine —while basic primary care needs of millions more are not met. Another way of helping in the decision making process is to decide on ordinary vs. extra-ordinary care. This is ever changing. What was extra-ordinary 10 years ago (such as exchange transfusions) is ordinary today.

By my definition, ordinary care would be care that was done at the time of Christ — efforts to keep the ill comfortable, sheltered, and fed with a reassuring touch of human presence.

Ordinary care today may include O₂ and IVs for comfort, hydration, analgesics for pain relief, hospice for a reassuring touch such as a kind and compassionate physician, staff, and family.

Extra-ordinary care would be the use of technology that could artificially sustain life for prolonged and/or indefinite lengths of time. This would be appropriate in certain poisonings, reversible kidney damage, etc., but may not be in the terminally ill.

Dr. Edward Hook, President-Elect of the American College of Physicians, states, “The central issue with the hopeless patient is comfort. If one feels that giving water by mouth or vein would make the patient more comfortable, we would be for it. On the other hand, there is no ethical requirement that a patient die with an intravenous line running.”

5. Patients and family should have the right to partake in the decision making process when at all possible.
6. The patients' interests are primary. The physician acts as the patient's advocate. This applies equally to the fee-for-service physician where there may be a tendency to overserve as well as the prepaid mode with potential to underserve.
7. Ethical guidelines should be just that — guidelines, not mandates or laws.
8. To paraphrase the Second Commandment and the Golden Rule, “What would we want done to ourselves.”

I urge that:

1. Physicians become better acquainted with the ethical opinions of the AMA Judicial Council and the MMA Committee on Ethics and Medical Legal Affairs.
2. Physicians become more active in public deliberation of ethical issues.
3. That ethical dilemmas you face be recorded and forwarded to the MMA Committee on Ethics.
4. Periodic discussion of current ethical issues be published in this journal.
5. MMA authorize our Communications Department to release these decisions to the media for public debate and increased public awareness.
6. That the MMA, or perhaps more appropriately the AMA, have a broad based advisory group that might include theologians, government representatives, third party carriers, medical researchers, legal (judges), and the media.

Pope Paul II said, “The search for a satisfactory ethical position depends fundamentally on one's conception of medicine. It is a question of knowing definitively if medicine is in the service of mankind, if the dignity of mankind, that which is unique and transcendent, or if a physician is considered first as an agent of the community, in the

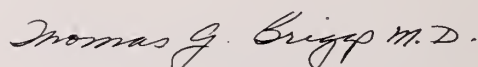
PRESIDENT'S LETTER

service of the interests of the healthy, at the expense of the care for the sick.²

Medical ethics have always been defined, since Hippocrates, by "respect and protection of the human being."

With our increasingly aged population (a side effect of medicine's progress) ethical dilemmas will increase; (increasingly expensive technology, surplus of health providers and limited amount of health resources) our bioethical dilemmas will become more acute. Medicine's leadership in ethical decisions is crucial. I urge your increased awareness and participation.

From "The Prayer for Life," "May we all live and die with dignity and love."



Thomas G. Briggs, M.D.
President
Minnesota Medical Association

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Blue Cross/Blue Shield Designated as Medical Review Agent for MA and GAMC

The Commissioner of Human Services (formerly DPW) has designated Blue Cross & Blue Shield of Minnesota (BCBSM) as the statewide Medical Review Agent for certification of admission for Medical Assistance and General Assistance Medical Care inpatient hospitalizations, effective July 1, 1984. BCBSM will administer the program under the name of Patient Care Coordination (P.C.C.). The Foundation for Health Care Evaluation (FHCE) and the Professional Services Quality Council of Minnesota (PSQCM) will cease to perform the review for MA and GAMC after June 30, 1984.

Watch for the Physician Bulletin from the Department of Human Services for further requirements of the program.

Metropolitan Physician Directory Published

The Metropolitan Health Planning Board has recently published a "Consumers Guide to Physicians". The guide discusses how to select a physician and provides a listing of Twin Cities physicians along with information on the location of their training, their specialty, board certifications, and hospital and HMO affiliations.

The data contained in the guide was based on information from an MHPB survey conducted in 1981 and updated and verified by phone during the summer of 1983.

If you are interested in obtaining a copy of the directory for use by your office staff or patients, or in updating your own data for subsequent issues, contact the Metropolitan Health Planning Board at (612) 291-6351. The cost of the guide is \$6.00.

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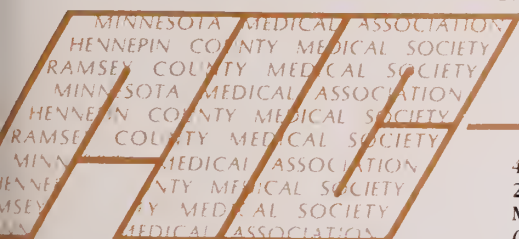
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Intrahepatic Biliary Stricture in Association with Choledochal Cyst

DANIEL H. DUNN, M.D.*; EDUARDO RODRIQUEZ, M.D.*; JACK VENNES, M.D.†;
and WILLIAM PAYNE, M.D.†

A 45-year-old man developed recurring episodes of cholangitis following resection of a choledochal cyst and choledochoduodenostomy. After several operations and multiple non-operative attempts to control biliary sepsis, a stricture in the left main hepatic duct was found. Intrahepatic involvement by Caroli's disease or intrahepatic stricture due to cholangitis must be looked for in patients with extrahepatic choledochal cysts.

INTRAHEPATIC BILIARY ductal abnormalities have been reported in association with choledochal cysts.^{4,6,7,8,11} Of 878 cases reported by Yamaguchi,¹² in which the type of cyst was confirmed, 18.9%, involved intrahepatic and extrahepatic bile ducts.

We report a case of an intrahepatic stricture in a patient with recurrent episodes of cholangitis following primary resection of a choledochal cyst and choledochoduodenostomy.

Case Report

A 45-year-old white male was referred to the Minneapolis Veterans Administration Medical Center (MVAMC) for evaluation of recurring episodes of ascending cholangitis. Eight years prior to admission he presented to his physicians with abdominal pain. Upper gastrointestinal series showed a deformed duodenal bulb which was thought to be secondary to duodenal ulcer disease. Elevated serum bilirubin levels were noted, however oral cholecystogram showed no abnormalities. An intravenous cholangiogram was performed because of persistently elevated bilirubin and alkaline phosphatase. The cholangiogram demonstrated a large cyst communicating with the common bile duct. A transhepatic cholangiogram demonstrated a choledochal cyst with a normal gallbladder and right hepatic ducts, however, the left intrahepatic ducts were not visualized (Figure 1). The choledochal cyst was resected completely with the gallbladder and a primary choledochoduodenostomy performed to reconstitute biliary drainage. Six months post-operatively the patient had an episode of cholangitis

characterized by fever, chills, *Escherichia Coli* septicemia and mild jaundice. The patient responded to antibiotic therapy but continued to have similar episodes every six months for three years. With one remitting episode of cholangitis repeat transhepatic cholangiogram demonstrated a "strictured" choledochoduodenostomy. The biliary enteric anastomosis was revised with clinical improvement in his condition.



Fig. 1 — Transhepatic colangiogram demonstrating dilated right hepatic ducts with large choledochal cyst.

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Reprints: Requests for reprints should be addressed to Daniel H. Dunn, MD, Department of Surgery, The Long Island College Hospital, 340 Henry Street, Brooklyn, NY 11201.

One year later he had another episode of cholangitis which resolved with conservative medical management but recurred three months later. After extensive evaluation which demonstrated a widely patent choledochoduodenostomy the diagnosis of "reflux" ascending cholangitis was made. After the right hepatic ducts and biliary enteric anastomosis were demonstrated to be patent by barium upper gastrointestinal series, an attempt was made to remove the choledochoduodenostomy from gastrointestinal continuity by truncal vagotomy, distal gastrectomy, oversewing of the duodenal stump and Roux-en-Y gastroenterostomy (Figure 2). The patient was admitted three months later with septicemia. Because of recurring bouts of septicemia the patient was begun on chronic antibiotic therapy for the next year. The episodes of cholangitis were fewer and of less severity until one year prior to admission, when he began having frequent episodes of cholangitis which were not controlled with antibiotics. He was then started on cyclic antibiotic treatment for monthly periods using Metronidazole, Trimethoprim — Sulfamethoxazole, Erythromycin, Doxycycline, Clindamycin and Cephalixin. This treatment regimen failed and he was referred to the MVAMC for further evaluation.

Following admission a transhepatic cholangiogram through the right lobe of the liver showed a normal right hepatic duct and biliary enteric anastomosis but did not visualize the left hepatic duct (Figure 3). A transhepatic cholangiogram was attempted from the left side but was unsuccessful. Because of the lack of visualization of the left hepatic duct and the suspicion that there might be a stricture in this duct, the patient was taken to the operating room and explored. A left

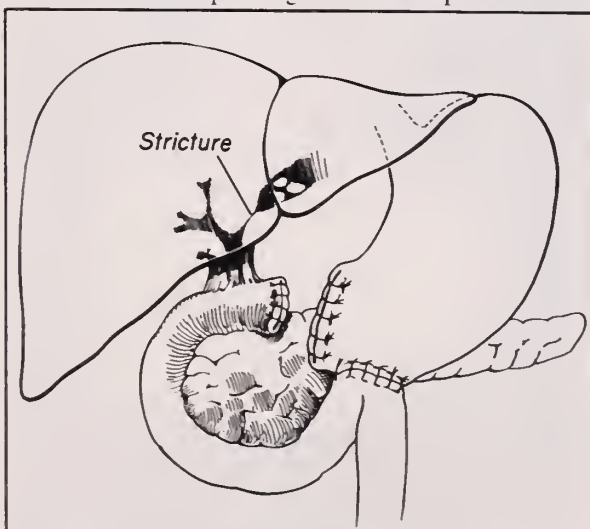


Fig. 2 — Cholechoduodenostomy removed from gastrointestinal continuity to prevent "reflux" of intestinal contents.



Fig. 3 — Transhepatic cholangiogram through right lobe demonstrates patent biliary-enteric anastomosis. Left hepatic duct is not visualized.

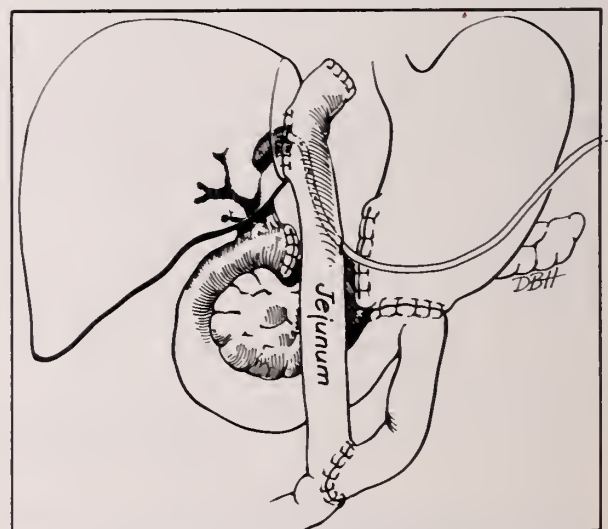


Fig. 4 — Left lateral segmentectomy with mucosal anastomosis to Roux-en-Y jejunostomy to drain remaining dilated left hepatic duct.

lateral segmentectomy was performed. An intraoperative cholangiogram through a dilated duct in the left lobe showed a stricture in the proximal left hepatic duct with dilation of the left hepatic ducts. A Roux-en-Y hepaticojejunostomy was performed to drain the remaining left hepatic ducts (Figure 4). Stones and purulent material were found in the biliary ducts of the resected left lobe of the liver. Microscopic examination of the left lobe of the liver showed periportal cholestasis, ectasia of the biliary ducts with acute and chronic inflammation and severe periductular fibrosis. The right lobe was normal. The patient has done well for more than three years, is back to full time employment without any further episodes of cholangitis. Liver enzymes and bilirubin are normal.

Discussion

Recurrent biliary sepsis and cholangitis in a patient with a previously resected choledochal cyst is frequently attributed to a stenotic biliary-enteric anastomosis. Alonso-Lej et al.¹ reported that 31% of patients with resections of choledochal cyst had postoperative ascending cholangitis associated with a biliary enteric anastomotic stricture.

Although cholangitis may occur following choledochoduodenostomy, the fact that cholangitis is caused by anastomotic stricture and subsequent biliary stasis instead of reflux has been well documented. Those patients with an adequate enterostomy do not have cholangitis unless a stricture of the anastomosis occurs.⁹⁻¹⁰ In a collected series reported by Madden¹⁰ in 1255 patients, the incidence of cholangitis after choledochoduodenostomy was 0.4%.

The occurrence of intrahepatic biliary cysts was first reported by Caroli in 1958.² Intrahepatic cystic dilations of the bile ducts have been demonstrated in association with dilatations of the extrahepatic bile ducts, but the association with intrahepatic stricture

has not been reported. Patients with intrahepatic involvement usually developed their symptoms at an older age than those with only extra hepatic involvement.³ Foulk⁵ believes that cystic dilation and congenital hepatic fibrosis of the intrahepatic ducts are part of the spectrum of congenital cystic disease of the liver.

This intrahepatic stricture may not have been congenital and could have been acquired as a result of several episodes of cholangitis or partial obstruction from the cyst. Although the stricture was not demonstrated until the final exploration, it appears to have been present on the initial cholangiogram (Figure 1).

Recurrent episodes of cholangitis secondary to obstructive jaundice is a serious complication, therefore, early diagnosis and surgical therapy is necessary to prevent the catastrophic manifestations of this disease. Persistent cholangitis after choledochoduodenostomy for correction of choledochal cyst should alert the physician, not only for anastomotic problems, but more importantly for a second anatomical or congenital abnormality.

Summary

This case illustrates an intrahepatic biliary stricture in association with choledochal cyst. Additional congenital anomalies must be sought in patients with recurring episodes of cholangitis after resection of choledochal cyst. Several points should be stressed from this case:

1. Choledochal cyst may present with variable clinical and structural abnormalities, therefore, extensive investigation should be performed at the initial evaluation to determine the extent of the hepatic ductal involvement.
2. Excision of the cyst is the procedure of choice for preventing cholangitis.
3. If a choledochoduodenostomy is widely patent it will not be the source of "reflux cholangitis."

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Minnesota law requires that all drivers of for-hire motor carriers, drivers transporting hazardous materials and drivers who work for a private business and drive vehicles licensed for more than 26,000 pounds must comply with the driver qualification rules established by the U.S. Department of Transportation. The U.S. D.O.T. requirements have been adopted in administrative rules enforced by the Minnesota Department of Transportation, Office of Motor Carrier Safety and Compliance.

One of the principle elements of the driver qualification rules is the requirement that drivers be *physically qualified* to drive. This means that *every two years* each driver must have a physical examination performed by a licensed doctor of medicine or osteopathy and *must carry on his person* a health card, signed by the doctor and certifying that he is physically qualified to drive a motor vehicle.

The U.S. D.O.T. rules establish the physical qualifications which drivers must meet and prescribe the elements of the examination and the forms which the examining doctor must sign.

The federal rule which establishes the driver qualification medical exam criteria admonishes doctors as follows:

The examining physician should be aware of the rigorous physical demands and mental and emotional responsibilities placed on the driver of a commercial motor vehicle. In the interest of public safety the examining physician is required to certify that the driver does not have any physical, mental, or organic defect of such a nature as to affect the driver's ability to operate safely a commercial motor vehicle.

Persons with monocular vision and diabetics who require insulin to control diabetes *may not be certified* to drive most trucks.

The driver qualification rules also provide for waivers for limb-impaired drivers and procedures for resolving conflicts of medical evaluation.

Doctors who perform physical examinations for truck drivers *must use the forms required by U.S. D.O.T.* These forms and the health cards which are issued to drivers after the exam are available from the Minnesota Department of Transportation, Office of Motor Carrier Safety and Compliance, 416 Transportation Building, St. Paul, Minnesota 55155 (612-296-2119) or from the Minnesota Motor Transport Association, Griggs Midway Building, 1821 University Ave., St. Paul, Minnesota 55104.

The rules may be obtained from the address above. In addition the U.S. D.O.T. has issued regulatory criteria for evaluating drivers to assist doctors in determining whether to certify individuals with certain medical conditions which may require further testing or evaluation but which are not automatically disqualifying.

Copies of the interpretations may be obtained from the Mn/DOT Motor Carrier Safety and Compliance Office.

Federal Motor Carrier Safety Regulations Code of Federal Regulations, Title 49, section 391.41. (Adopted in Minnesota as PSC 5 & 6.)

Section 391.41 and 391.43 Physical Qualifications and Medical Examination.

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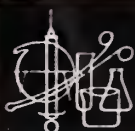
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References:

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BRIEF SUMMARY

PRDCARDIA* (nifedipine) CAPSULES

For Oral Use

INDICATIONS AND USAGE: 1. **Vasospastic Angina:** PRDCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation; 2) angina or coronary artery spasm provoked by ergonovine; or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PRDCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and/or adequate doses of beta blockers.

2. **Chronic Stable Angina (Classical Effort-Associated Angina):** PRDCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PRDCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PRDCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS: Known hypersensitivity reaction to PRDCARDIA.

WARNINGS: Excessive Hypotension: Although in most patients, the hypotensive effect of PRDCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PRDCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PRDCARDIA and a beta blocker, but the possibility that it may occur with PRDCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PRDCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and, if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PRDCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PRDCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PRDCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PRDCARDIA initiation. It is important to taper beta blockers if possible, rather than stopping them abruptly before beginning PRDCARDIA.

Congestive Heart Failure: Rarely, patients usually receiving a beta blocker have developed heart failure after beginning PRDCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS: General: Hypotension: Because PRDCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PRDCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PRDCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug Interactions: Beta-adrenergic blocking agents. (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PRDCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates. PRDCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis. Administration of PRDCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PRDCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility. When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy. Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in rats, mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients; transient hypotension in about 5%; palpitation in about 2% and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PRDCARDIA or concomitant antianginal medication. Additionally the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PRDCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGPT, and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PRDCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PRDCARDIA therapy, has been reported twice in the extensive world literature.

HOW SUPPLIED: Each orange, soft gelatin PRDCARDIA CAPSULE contains 10 mg of nifedipine. PRDCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66), 300 (NDC 0069-2600-72), and unit dose (10x10) (NDC 0069-2600-41). The capsules should be protected from light and moisture and stored at controlled room temperature 59° to 77°F (15° to 25°C) in the manufacturer's original container.

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An Overlooked Tribute for Dr. William Worrall Mayo

THOMAS E. KEYS, M.A., Sc.D. (H.C.)*; and JACK D. KEY, M.A., M.S.†

The beautiful history of medicine stained glass window in the Mayo Foundation House suggests the accelerating rate of change in medicine over the centuries. A somewhat more modest, potential, companion stained glass window to commemorate the life and contributions of Dr. William Worrall Mayo is described.

IN 1938, DR. AND MRS. WILLIAM J. MAYO moved from their spacious home (Figure 1) to a smaller but attractive house they had built nearby. They gave their larger home to the Mayo Foundation for Medical Education and Research. Dr. Donald C. Balfour, then Director of the Mayo Foundation, stated, "It was (Dr. and Mrs. W.J. Mayo's) hope and intent that Mayo Foundation House would be 'a meeting place where men of medicine may exchange ideas for the good of mankind.'"¹ With the passage of time, their expectations have been richly realized. Thousands of scientific and medical-education-related meetings, seminars, lectures, and demonstrations have been held there by the Mayo Clinic staff and fellows.

Soon after the donation, it was realized that the large hall on the third floor was an excellent place to focus the educational and related social functions. Certain changes were necessary, however, to take best advantage of the space. These included reconstruction, air conditioning, an enhanced sound system and lighting, and audiovisual facilities. Dr. Balfour thought that the east window, particularly well adapted to stained glass, could be designed to harmonize with the medical historical motif of the room created by the inclusion of the shields of many of the world's medical schools around the walls. His idea was to design a window emphasizing the basis of medical progress. The overall objective was to show the interrelation of medical practice, medical education, and medical research.

Dr. Balfour appointed a committee to develop ideas and plans. This committee met frequently and worked hard drawing up various designs. Final plans were submitted to Ellerbe and Company, the architects for the hall, and they in turn selected Mr. Robert

Metcalf, director of the Dayton Art Institute, Dayton, Ohio, to execute the designs into a stained glass window.

The window (Figure 2) was completed and installed in March 1943. It has three lights of four panels each. The left light represents the history of medical education, the center light the history of medical practice, and the right light the history of medical research. Each horizontal level of three panels depicts one era of medicine. In each panel, outstanding men, institutions, and events represent the great contributions made during that era.

One of the authors of this paper (Thomas E. Keys) was a member of Dr. Balfour's committee and was responsible for much of the information necessary to develop details for the window's design. He met often with Mr. Robert Metcalf, and together they went over medical historical books and journals to find the information needed and to select appropriate quotations.

During one of their many conversations, the possibility of a second, smaller window was discussed. It was to incorporate highlights from the life of the Drs. Mayo's father — Dr. William Worrall Mayo. The thought then was that it could be placed in juxtaposition to the larger window and have two lights of three panels each (Figure 3). World War II exigencies interfered, the committee members serving duty with the Armed Forces or becoming in other ways engaged in government service. Thus, the creation of this window was not pursued. Meanwhile, Mr. Metcalf gave his design, which was in color, to Keys.

In order not to detract from the unique quality and perfect balance of the history of medicine stained glass window, it would be more appropriate to place the William Worrall Mayo tribute window somewhere along the north wall in this large hall. Also, Metcalf's design for the tribute window was only meant, at the time, to give somewhat of a rough idea of his concept. If it were ever decided to install the

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Fig. 1 — Mayo Foundation House. Drawing by J. Desley.



Fig. 3 — Proposed William Worrall Mayo stained glass window by Robert Metcalf. By permission.

Mayo window, the details, such as the features of the individuals, would need to be enhanced and the small blocks around the main subjects in each panel would need better definition.

Brief Description of the Proposed William Worrall Mayo Window

Panel One (Lower Left)

This panel shows William Worrall Mayo arriving in the United States in 1845. Born in Eccles, a small

village near Manchester, England, on May 31, 1819, Mayo was educated in Manchester and studied chemistry and physics under the renowned John Dalton, to whom he became an assistant. After arriving in the United States, he promptly gained employment as a chemist or pharmacist at Bellevue Hospital in New York City. Later, he studied medicine in the Midwest, and he was awarded a degree in 1850 from Indiana Medical College. After a short stay in Indiana, he moved to Minnesota.



Fig. 2 — Stained glass window in Mayo Foundation House.

Panel Two (Middle Left)

The scene for this panel is laid in Le Sueur, Minnesota, during the Sioux Indian uprising. Dr. Mayo is shown bandaging one of the wounded stockage defenders. Also shown are some of the wives firing weapons at the Indians. William James, the elder son of the Mayos, was born here on June 29, 1861. Charles Horace, the second son, was born, after the Mayos had moved, in Rochester, Minnesota, on July 19, 1865.

Panel Three (Upper Left)

This panel shows William Worrall Mayo, assisted by his two young sons, performing an operation. As Dr. W.J. Mayo recalled in 1938,

... I helped Father with his surgical operations, acting as first assistant, and Charlie, at the ripe age of twelve, was forced into giving the anesthetic, the old ACE mixture, alcohol one part, chloroform two parts, and ether three parts. He was initiated at an operation for the removal of a large ovarian tumor. Father was one of the first surgeons in America to undertake these operations. The operation in question was done in a private home, an old house with a stone barn about two miles southeast of Rochester on what is now Highway 52. In the midst of the operation, the doctor who was giving the anesthetic fainted. Charlie climbed up onto a cracker box and gave the anesthetic, and he did so well that from that time on he was the family anesthetist.²

Panel Four (Lower Right)

Dr. Mayo and his sons are shown articulating the skeleton of a human body.

Much has been written about and many appreciate the accomplishments of his sons, William J. and Charles H. Mayo, but few are aware of the fact that the senior Dr. Mayo carefully prepared the boys for their future roles as physicians and leaders in medicine. From their early years, they were taught the

advantage to be gained by a constant search for an application of new and improved techniques for providing health care. He himself was inquisitive about new techniques and traveled to New York for advanced study in gynecology, long after he had established himself in practice and perhaps before he could comfortably afford to leave his practice and his family for the time required for the study. He urged his sons to read and intrigued them with an outstanding library. They accompanied him on his daily rounds and gained much practical knowledge as preceptees under his watchful eye. By his example and his teaching, he instilled in them his conviction that good medical care should be made available to all in need. This early teaching, not only of medicine but of the moral obligation of physicians to all society, no doubt stimulated the young Doctors Mayo in their later deliberations as they established the Mayo Foundation for Medical Education and Research.³

Panel Five (Middle Right)

Assisted by his wife, Louise, Dr. Mayo taught his sons the use of the telescope. When Dr. W.J. Mayo later built his own large home, today the Mayo Foundation House, he had a tower installed so that he could study the heavens.

Panel Six (Upper Right)

William Worrall Mayo is shown politicking. A liberal, active in community and state affairs, he held many minor offices.

Concluding Note

Some day, perhaps, the ending of this story will be written with the installation of a window in the Mayo Foundation House to commemorate the life of Dr. William Worrall Mayo. He, through those he influenced, made significant contributions to the advancement of medicine and the health care of the peoples of the world.

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Neonatal Herpes Virus Infections

Prevention, Diagnosis and Treatment
Part 1

RICHARD C. GEHRZ, M.D.*

The herpes group viruses, herpes simplex virus types 1 and 2 (HSV-1, HSV-2) and cytomegalovirus (CMV), are a major cause of morbidity and mortality in the neonatal period. Increasing public awareness of herpes virus infections and their impact on the mother and fetus makes it essential that primary care physicians become familiar with these agents. The following discussion reviews the clinical implications of HSV and CMV and provides guidelines for obstetrical and neonatal management.

NEONATAL HERPES SIMPLEX virus (HSV) infection is a major cause of morbidity and mortality in newborn infants, affecting approximately 1 in 3,500 live births in the United States¹⁻⁴. The virus is primarily spread to the infant during the perinatal period, either by vaginal delivery through an actively infected birth canal or less frequently by ascending cervical infection with premature rupture of the membranes. Transplacental, congenital infection with HSV is uncommon and probably results in fetal death in most cases.

Vaginal delivery of a mother with active, primary genital HSV infection is associated with a high incidence of neonatal infection. Active, recurrent herpes infection of the genital tract is associated with a lower, but still significant incidence of infection of the infant. Therefore, careful antepartum obstetrical screening for evidence of HSV and appropriate measures to prevent perinatal infection of the infant are extremely important. Infants who present with symptomatic HSV infection in the first four weeks of life have an extremely high morbidity and mortality. In approximately three-fourths of cases, the virus either becomes disseminated or localizes to the central nervous system and is associated with a mortality or nonquality survival rate in excess of 90% without treatment. Even with antiviral chemotherapy, more than 50% of the infants either die or have severe neurologic sequelae⁵. In addition to disseminated and localized central nervous system disease, topical infection with HSV may lead to significant long term sequelae, particularly keratitis with residual blindness.

It is apparent that prevention of exposure of any

neonate is the only adequate way to control neonatal HSV infection. Recommendations concerning clinical and laboratory monitoring of the pregnant woman and obstetrical management at the time of delivery remain somewhat controversial⁶⁻⁹. The recommendations of Visintine et al.⁶ have provided useful guidelines for the obstetrical and perinatal management of mothers and infants with suspected HSV infections.

Suggested Guidelines for Obstetrical Management of Herpes Simplex Infection During Pregnancy⁶

1. Indication for viral cultures of lesions and/or cervix during pregnancy:
 - (a) Genital herpes
 - (b) History of genital herpes, preferably laboratory confirmed.
 - (c) Sexual partner(s) with genital herpes, preferably laboratory confirmed.
2. Frequency of cultures:
28, 30, 32, 34, 36 weeks and weekly thereafter until delivery.
3. Cesarean delivery indicated if:
 - (a) Genital lesions at time of delivery.
 - (b) Positive herpes culture within one week of delivery.
 - (c) If previous cultures positive and results of recent cultures not available.

Vaginal delivery if:

- (a) Negative herpes culture within one week of delivery even if earlier cultures were positive.

It is important to recognize that adequate management at the time of delivery depends upon a program of regular prenatal screening either by viral isolation in tissue culture and/or identification of HSV infection by cytology with PAP smears or direct immunofluorescence. In summary, women with past history of genital HSV infection either documented by laboratory tests or on the basis of clinical history

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Supported in part by The Research and Education Fund, St. Paul Children's Hospital, and by Grants #AM18883, #HD12342, and #HD16173 from the United States Public Health Service.

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alone, should be delivered by C-section only if there is documented evidence of active HSV infection within one week of delivery. Demonstration of genital herpes simplex virus before that time is not an absolute indication for C-section, since the virus is only acquired by colonization at the time of or immediately prior to delivery.

Unfortunately, approximately two-thirds of women with active HSV infection of the genital tract have no clinical evidence of active herpetic lesions. Careful history for early symptoms such as pain, tingling or numbness, or fever in the mother, or sexual contact with a male with genital herpes lesions may be found in a significant number of cases. Speculum examination may also reveal non-specific cervicitis without vesicular lesions characteristic of herpes simplex virus infection. Screening for HSV may also be indicated in certain high risk obstetrical patients such as pregnant adolescents, or women with multiple sexual contacts, regardless of history or physical findings. The only adequate way to exclude active herpes infection is to obtain repeated cultures and/or cytology on a regular basis. Viral isolation generally takes from 24-72 hours, whereas cytology may provide immediate information. However, the sensitivity of all direct identification techniques is not entirely adequate to exclude active infection. Therefore, viral isolation remains the best method of prenatal screening.

Although the expense of longitudinal viral isolation studies during pregnancy may be significant, exclusion of active HSV infection by laboratory documentation can prevent the need for cesarean section in the majority of cases of maternal genital herpes infection even when the disease has been active at some time during pregnancy. Recognizing the greatly increased cost and morbidity of cesarean section, recommended screening procedures are both cost effective and in the best interest of patient care.

Recommended Guidelines for Management of Newborn Infants Suspected of Exposure to HSV include the following⁶:

1. If mother has a history of primary HSV (gin-

givostomatitis) during pregnancy or recurrent non-genital HSV (cold sores) during pregnancy: avoid infant contact with maternal lesions; if infant is symptomatic, isolate and culture. Isolation precautions are not necessary if the infant is asymptomatic and no active maternal lesions are present at the time of delivery.

2. If the mother has a history of genital HSV infection during the pregnancy, a past history of genital herpes, preferably laboratory confirmed, or contact with a sexual partner(s) with genital herpes, preferably laboratory confirmed; infants should be isolated and cultured for HSV (mouth, nasopharynx, urine) on the day of delivery and after q four to five days; infants who are directly exposed to HSV should be observed in the hospital for a minimum of two weeks and treatment with adenine arabinoside at 15-30 ml/kg/day should be initiated if symptoms appear. Cervical cultures should also be obtained from the mother. Management of the asymptomatic neonate from whom HSV is isolated remains controversial. However, this author recommends that these infants be treated because of the high incidence of systematic spread with subsequent morbidity and mortality.

Successful treatment of neonatal herpes simplex infection depends upon early diagnosis and institution of antiviral chemotherapy in infants without evidence of advanced central nervous system disease. Infants presenting with intractable seizures, lethargy, and/or anatomical evidence of CNS damage have a poor prognosis despite treatment. Even with early diagnosis, present therapy with adenine arabinoside is at best associated with severe morbidity or mortality in more than half the cases. It is therefore apparent that new antiviral agents must be developed for successful treatment of this disease.

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Common Causes of Shoulder Pain

Diagnosis and Treatment

EDWARD V. CRAIG, M.D.*

The painful shoulder is a common disability, and can have as its etiology calcific tendinitis, subacromial impingement and rotator cuff tears, glenohumeral arthritis, frozen shoulder, AC arthritis, shoulder instability and cervical spine disease. The differential diagnosis and the treatment of these varied conditions are discussed.

BECAUSE THE SHOULDER has the most motion of any joint in the body, a shoulder which is painful can be extremely disabling. The accurate differential diagnosis of the painful shoulder can be extremely difficult for the following reasons: (1) Many causes of shoulder pain have similar clinical patterns, with pain over the anterior deltoid, outer aspect of the upper arm, and scapula. (2) The tag "bursitis" is a convenient label and can often delay proper diagnosis. (3) Loss of motion can be subtle and compensated for by scapulothoracic motion and forearm pronation and supination. (4) Routine Xrays are often negative. (5) The complex interaction of deltoid, rotator cuff, and biceps tendon with scapulothoracic, glenohumeral, acromioclavicular, and sternoclavicular joints can make separation of pathology confusing. (6) The superimposition of frozen shoulder can delay diagnosis indefinitely. (7) Only recently have several advances been made in our understanding of shoulder instability, subacromial impingement, and some forms of glenohumeral arthritis.

In an attempt to supply some of the differential diagnostic points to shoulder pain, no attempt has been made to discuss some of the obvious causes which do not prove diagnostically difficult, such as acute dislocations, proximal humeral fractures, AC separations, and primary or secondary bone tumors.

The Importance of Xrays

Perhaps nowhere are Xrays in two perpendicular planes more important than in the glenohumeral joint. The best view of the glenohumeral joint is obtained in relation to the plane of the scapula, as the glenohumeral joint is neither in the coronal or sagittal plane. Routine radiographs of the shoulder should include at least an AP and lateral in the scapular plane, and an axillary view (trauma series). In addition,

an AP with the humerus in internal and external rotation is also helpful, if the status of the patient permits. The trauma series can be obtained even with acute trauma, as it can be obtained both with the patient supine or standing, and with the arm in or out of a sling. An axillary view is especially important in acute trauma, as this is sometimes the only view which will show the direction of an acute shoulder dislocation or fracture dislocation.

Shoulder Instability

The bony stability of the glenohumeral joint is minimal, for the glenoid is nearly flat. This destabilizes the joint but makes it possible for the tremendous range of motion that is so essential for overhead activity. The stability of the shoulder is provided statically by the shoulder capsule and ligaments, and dynamically by the musculotendinous (rotator) cuff.

Stretching of the capsule either by trauma, generalized ligamentous laxity, or collagen disease can lead to painful instability and subluxation. This is most often a problem of the younger patient, in particular the athlete engaged in throwing sports or swimming, where stress against the restraining ligaments of the glenohumeral joint can occur.^{6,10} Clinical examination usually reveals a normal range of motion, and, in fact, motion may actually be increased if there is capsular laxity. The most helpful clinical sign is a positive apprehension test, with pain produced when the shoulder is stressed in the direction of anterior, posterior, or inferior instability.

Xrays may be helpful, particularly the axillary view, which may show bony reaction on the glenoid, and the AP view in internal rotation, which may show an impression defect in the humeral head.

To establish a diagnosis, stress Xrays and examination under anesthesia may be helpful. Arthroscopy has occasionally been useful to reveal the direction of instability.

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With the diagnosis of shoulder instability, the initial treatment consists of exercises to increase muscle tone. If the instability is anterior, the subscapularis is strengthened; if posterior, the external rotators are strengthened; and if inferior, the supraspinatus and middle deltoid are strengthened. Should conservative therapy fail, surgical stabilization is effective, in particular, the operations which tighten the glenohumeral joint capsule or repair labrum avulsion.⁶

Acromioclavicular Arthritis

Typically this occurs in the younger patient under 40 years of age, often as a result of a previously unidentified injury to the AC joint. In addition, AC joint disease among athletes, particularly weight lifters, has been reported.² In addition, any patient with subacromial impingement can manifest AC arthritis as part of the impingement process.⁹ Clinical findings include joint tenderness over the AC joint, a prominent swelling over the AC joint, and characteristic pain produced by adducting the arm across the chest. Radiographically one sees narrowing, spur formation, or cystification and sclerosis of the AC joint. A diagnostic injection test of 2 or 3 ccs of 1% Xylocaine directly into the joint will often eliminate the pain and localize the source of shoulder pain. Conservative measures include appropriate anti-inflammatories and a limited number of steroid injections directly into the AC joint. Failure of conservative therapy may warrant AC arthroplasty, consisting of a resection of the outer portion of the clavicle, thereby effectively removing the source of pain.

Calcific Tendinitis

Calcific tendinitis is actually a chemical bursitis and tendinitis which develops typically in the patient 25 to 40 years of age, often after a period of overuse. There is no known abnormality of calcium or phosphorous metabolism associated with this disorder. Clinically one finds a shoulder extremely painful with any motion and localized tenderness over the area of the calcium deposit, which is typically the area of supraspinatus tendon insertion on the greater tuberosity. In time the calcific bursitis can subside, leaving a frozen shoulder as its result. Diagnosis is not usually difficult in the typical case, as fluffy calcium deposits are evident on Xray. It is in this condition that the AP of the humerus in internal and external rotation is particularly useful, as this may unmask calcifications which might otherwise be hidden.

This acutely painful condition is usually made dramatically better by aspiration of the deposit with a 20 gauge needle directed over the point of maximum

tenderness. Useful adjuncts to the treatment include anti-inflammatory medication, rest, and ice, followed by stretching exercises to maintain motion. Heat typically increases the pain and should be avoided. Chronic calcific tendinitis usually causes bursal thickening and may require surgical excision of the calcium with concomitant bursectomy.

Impingement Syndrome and Rotator Cuff Tears

The most common cause of shoulder pain in the age group over 40 is subacromial impingement of the bursa and rotator cuff tendons by the coracoacromial arch. In time, this mechanical impingement can cause wear, erosion, and eventual rupture of the tendons of the rotator cuff. In addition, since the biceps tendon lies anatomically in a groove between subscapularis and supraspinatus, biceps tendinitis with rupture can be part of the spectrum of subacromial impingement and rotator cuff tear.⁹ Thus patients who present with a rupture of a long head of biceps should be questioned and examined carefully for shoulder pathology. A history of trauma is not typical in the impingement syndrome but there is usually a history of pain with overhead use. Often there is limitation of motion, particularly at the extreme of forward elevation when the supraspinatus tendon and its insertion on the greater tuberosity are brought under the anterior acromion. This has been called the impingement sign, and it is always positive in this syndrome.⁹ If there is a full thickness defect in the rotator cuff, there may be spinatus atrophy, weakness of external rotation, inability to use the arm overhead, subacromial crepitus, and a "fluid sign" caused by glenohumeral joint fluid in the subacromial bursa. Xray findings in subacromial impingement include a spur on the under surface of the anterior acromion, sclerosis of the greater tuberosity from mechanical wear, and, if the rotator cuff is completely torn, a decrease in the acromiohumeral (A-H) interval as measured on the AP Xray.

Diagnostically, it is often difficult to distinguish subacromial impingement from other causes of shoulder pain. The most useful diagnostic test is the injection of 1% Xylocaine beneath the acromion, which anesthetizes the bursa. If this eliminates pain, the diagnosis of impingement is established. However, the test may be invalidated in the presence of a frozen shoulder.

Shoulder arthrography is the only reliable test to document the presence of a full thickness tear of the rotator cuff.

Impingement with an intact cuff is best treated with anti-inflammatory medication, exercises to maintain

range of motion, and judicious use of subacromial corticosteroid injections to diminish bursal swelling and inflammation.

The indication for surgical intervention is six months of pain despite adequate physical therapy and conservative treatment, or the development of a positive arthrogram indicating the presence of a rotator cuff tear. Surgery in chronic impingement syndrome consists of subacromial bursectomy and anterior acromioplasty to remove the area of mechanical impingement on the rotator cuff. In the presence of cuff disruption, anterior acromioplasty should be combined with a tendinous repair. Postoperatively it is imperative that physician directed exercises be introduced in the early postoperative period if the surgery is to be successful.

Glenohumeral Arthritis

Glenohumeral arthritis from any cause can be a crippling cause of shoulder pain in the older patient. Among its multiple etiologies are rheumatoid arthritis, infection, neuroarthropathy, avascular necrosis, arthritis of dislocations, primary osteoarthritis, metabolic crystalline disease, and cuff tear arthropathy.^{3,5,8}

Clinically, there is usually painful, restricted motion in any direction, especially on rotation. There is usually posterior joint line tenderness on palpation inferior to the posterior corner of the acromion.

In the early stages of glenohumeral arthritis, pain relief is usually satisfactory with medication and heat. As the joint incongruity increases, pain relief is more difficult to obtain and a decision must be made regarding surgical intervention.

Unlike for some other joints, joint debridement has not been as effective in providing pain relief in the shoulder. In addition, inadequate surgical intervention leads to severe muscle and capsular scarring which can preclude a satisfactory result from a later joint resurfacing.

Shoulder fusion is a reliable operation for eliminating pain in appropriate patients with normal scapula muscles, as scapulothoracic motion can provide surprisingly good function.⁷ However, rotation is lost with arthrodesis, and thus fusion is unacceptable in patients with bilateral shoulder disease. At present the indications for shoulder fusion are limited to active infection or wide spread muscle deficits consisting of loss of both deltoid and rotator cuff muscles.⁸

Total shoulder replacement of the glenohumeral joint with an unconstrained polyethylene glenoid and metal intramedullary humeral component has proven

to be a reliable, preferable surgical alternative to other treatments for glenohumeral arthritis, providing technical considerations are attended to and the patient is rehabilitated properly. Successful arthroplasty of the shoulder depends as much on the integrity and function of the muscles surrounding and moving the shoulder as a technically satisfactory implant. Tendon transfers, and bone and tendon grafts may be needed to reconstruct deficient soft tissue or bony elements of the arthritic joint. Thus, the total shoulder replacement can be exceedingly difficult technically.

However, near normal motion of the joint can be obtained with proper attention to surgical detail and to proper postoperative rehabilitation. The humeral component has been used since 1953, and the glenoid component has been used since 1973. Thus far problems with mechanical failure have not been significant. Total shoulder replacement continues to be a predictable, effective means of relieving shoulder pain due to joint incongruity and re-establishing motion in a painful arthritic shoulder.⁸

Frozen Shoulder

A frozen shoulder (adhesive capsulitis) is the end result of a variety of etiologic mechanisms, including trauma, impingement, cervical arthritis, calcific tendinitis, and glenohumeral arthritis. It is not in itself a diagnosis but is a symptom complex that results in loss of glenohumeral joint motion. The earliest motion to be lost in a mild frozen shoulder is external rotation. Whatever the etiology, a frozen shoulder itself will be extremely painful because the sensory receptors in the joint capsule are stretched at the extremes of motion. This makes pinpointing an etiology for the frozen shoulder particularly difficult, since the usual clinical and special tests may be unreliable if they are obscured by limited, painful motion. Investigative tests, such as a bone scan, can be helpful indicators of subclinical infection or early inflammatory joint changes.

Treatment of frozen shoulder is directed at re-establishing normal shoulder motion, through stretching exercises in the direction of forward elevation, external rotation, and internal rotation. Abduction is not stressed as this is a combination of external rotation and elevation. Many times heat and mild pain relievers will be helpful adjuncts.

If the patient has plateaued after three months and the frozen shoulder is still present, careful manipulation under anesthesia may be useful in selected patients if followed by early exercises to maintain motion. Caution is advised, however, since a severely osteoporotic patient is prone to fracture of the hu-

merus under manipulation. For this reason, in the osteoporotic patient population an open lysis of adhesions is preferable.

Once the pain due to frozen shoulder has been eliminated by exercises, manipulation under anesthesia, or open lysis of adhesions, other investigative tests, such as subacromial or AC injection with Xylocaine become better able to be interpreted.

Cervical Spine Radiculopathy

Cervical spine disease, particularly in the C₅₋₆ and C₆₋₇ distribution can cause shoulder pain and eventually frozen shoulder. Usually, the patient is in the older age group, gives no history of trauma, and typically has a physical examination consisting of paraspinous muscle spasm, pain on motion of the neck, particularly in extension, and may complain of radiating pain from the neck to one or both shoulders. Loss of reflexes and muscle wasting may occur. A helpful differentiating point is biceps weakness, as this does not occur in primary shoulder joint pathology and may be part of the C₆ radiculopathy.^{1,4}

Xray of the shoulder is often normal, unless a frozen shoulder with concomitant osteoporosis is present. Cervical spine Xrays may show loss of normal lordosis, narrowing of the foramen, and spur formation. EMG may be helpful to confirm the clinical suspicion.

Therapy should be directed to relieving muscle spasm, reducing the arthritic inflammatory component, and the judicious use of a neck collar or cervical traction. If all conservative modalities have been exhausted, surgical intervention such as decompression or fusion may eventually be considered in the patient with an established neurological deficit.

Summary

Shoulder pain can be an extremely disabling condition from a variety of causes such as those previously described. With a careful history and physical examination, adequate X-ray studies and judicious use of specialized diagnostic tests, specific therapy can usually be instituted to provide a lasting source of relief to the patient.

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Second Annual Hawkeye Sports Medicine Symposium University of Iowa Sports Medicine December 6-8, 1984

Iowa Memorial Union, The University of Iowa, Iowa City, Iowa.

Of interest to: orthopaedic surgeons; team physicians and other health care professionals who provide primary or consultant care for athletes; coaches and administrators

Details about registration, topics and featured speakers will be announced later. The symposium will be accredited for physicians, nurses, athletic trainers, physical therapists and continuing education units for other attendees. Attendance will be limited and early registration will be encouraged.

Cover Photograph

"Fourth of July"

Dr. Freeman D. Kovack, a Minneapolis family physician, took the cover photograph. The editors have taken the liberty of calling the beautiful cover "Fourth of July;" however, the slide is of fireworks taken at the Minnesota Sommerfest 1983. The Sommerfest was on the Capitol grounds in St. Paul.

He used a Nikon F3 camera with a zoom lens, and the shutter was open.

The October 1982 and 1983 covers of MINNESOTA MEDICINE also were from Dr. Kovack's 35 mm slides.

Rheumatology Corner

Lymphapheresis and Radiation Therapy for Rheumatoid Arthritis (RA)

THOMAS W. BUNCH, M.D.*

PERHAPS THE MOST important advance in understanding the pathogenesis of rheumatoid arthritis has been the realization that immune mechanisms play a major role. Initially the discovery of rheumatoid factor allowed more precise diagnosis, but further work showed its importance in ongoing disease was quite limited. The major thrust of treatment for RA recently has been in utilizing ways of altering or depleting lymphocyte levels, certain types of which have been shown rather clearly to be pathogenic. We will discuss briefly here two treatments aimed at the lymphocyte; (1) lymphapheresis which removes large numbers of them and (2) total nodal irradiation which kills them.

All techniques which remove substances from the blood have been given the general term "apheresis". Leukapheresis then refers to removal of large numbers of all types of white blood cells. Since granulocyte counts in the blood rapidly return to normal after these treatments, but lymphopenia develops, lymphapheresis is the name usually used to refer to this selective removal of white blood cells by cell separators.

Technology for removal of blood elements is available because of work in France and at the NIH to collect granulocytes from donors to give to patients with aplastic anemia. Refinement of these techniques has lead to several types of machines in which blood is pumped from the patient's vein through an intravenous catheter into a centrifugal element which separates the blood into the component parts, i.e. plasma, red blood cells and buffy coat. The desired element to be removed can then be delivered to a collection bag and the other blood elements returned either into the same arm (intermittent flow centrifugation, example Haemonetics machine) or into the other arm (continuous flow type, example IBM cell separator). Also available are filtration and gravity type separators.

An initial burst of enthusiasm based upon uncontrolled trials with plasmapheresis (the selective removal of plasma but not cells) in RA was finally

followed by controlled trials which have shown no benefit for this technique in RA. More recent controlled trials removing granulocytes or granulocytes plus plasma have shown benefit, albeit quite modest. Since total blood lymphocyte counts in patients so treated do decrease, it is felt that this is the basis for the improvement seen in these patients although at times patients improving the most have the least drop in their lymphocyte count and vice versa.

Although lymphapheresis has been quite safe except for minor reactions such as fever or tingling sensations, plasmapheresis is more risky and a few deaths have been reported. It would not appear at this time that these techniques are a practical or very efficacious way of treating rheumatoid arthritis and in addition are quite expensive. Perhaps combined with other agents such as immunosuppressives or if further refinement of cell separation can be lead to selective removal of only pathogenic lymphocytes, lymphapheresis might eventually become a practical and useful treatment modality. Certainly there is no place for anything now but controlled trials in further evaluations.

An even more dramatic and controversial treatment for rheumatoid arthritis involved "total" lymphoid irradiation which is a term used to describe radiation treatment to most of the lymph nodes of the body.

Radiation is delivered in two three week treatments. First 2000 rads are given to a "mantle" field of cervical, axillary, mediastinal and hilar nodes and thymus followed by 2000 rads to nodes below the diaphragm including para-aortic, iliac and inguinal-femoral nodes and spleen. Patients improve clinically and profound lymphopenia develops, but no controlled trials have been done and "it is a no going back" approach. Although long term follow up of total lymphoid irradiation therapy for Hodgkin's disease has proven quite safe, the history of drug trials in rheumatoid arthritis has shown us that for any given agent toxicity rates are often much higher in RA than they are in non-rheumatic conditions.

Although treatment for rheumatoid arthritis can be targeted against lymphocytes in general, no doubt more effective and safer therapy will concern itself

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with altering only pathogenic cells, leaving the "innocent" lymphocytes alone.

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University of Minnesota Continuing Medical Education

Conference on Summer Sports Medicine and Soccer Clinic — July 25-26, 1984

Malcolm Moos Health Science Tower, University of Minnesota, Minneapolis

Fee: \$85

Credit: 9.75 Category 1 AMA
9.75 Prescribed AAFP

This conference, presented in conjunction with the Minnesota Sports Festival, will focus on the enhancement of sports effectiveness and the avoidance of injury.

Pediatric Orthopaedic Surgery: Issues and Advances — July 30-August 1, 1984

Hyatt Regency Minneapolis

Fee: \$350

Credit: 18 Category 1 AMA

This course will provide an update on the diagnosis and treatment of orthopaedic disorders and injuries in children.

Geriatric Medicine Program for Faculty of Family Practice Residencies — August 22-24, 1984

Minneapolis Plaza Hotel

Fee: \$200

Credit: 17.5 Category 1 AMA
17.5 Prescribed AAFP

Radiology/84: Thoracic Imaging — September 10-14, 1984

Wiley Hall, University of Minnesota, Minneapolis

Fee: \$450

Credit: 28 Category 1 AMA

This review will emphasize fundamentals of breast, intrathoracic anatomy and disease states utilizing conventional imaging modalities including computed tomography and nuclear magnetic resonance.

Medical Directors Conference — September 13-14, 1984

Minneapolis Plaza Hotel

Management of Alzheimer's Disease — September 17-19, 1984

Wiley Hall, University of Minnesota, Minneapolis

Trauma and Critical Care Seminar — September 20-22, 1984

Pillsbury Auditorium, Hennepin County Medical Center, Minneapolis

Coronary Heart Disease Workshop — September 23-25, 1984

Wilder Forest, Stillwater, Minnesota

Aging, Vitality and Running — September 28-29, 1984

Amfac Hotel, Minneapolis

Haiku and the Art of Clinical Practice

JAMES G. BRUEGGEMANN, M.D.*

Acquisition of clinical acumen requires development of observational skills. It is suggested that these may be enhanced by exposure in undergraduate and continuing medical education to observational techniques used in the arts. A specific example is discussed, that of a poetic form called haiku.

THE MATURATION OF a clinician involves varied learning experiences, some more essentially logical than others. Basic science curricula in the early years are by and large logical and analytic. Perhaps that is their appeal, and the habits acquired there linger.

"Western science has made nature intelligible in terms of its symmetries and regularities, analyzing its most wayward forms into components of a regular and measurable shape. As a result, we tend to see nature and to deal with it as an 'order' from which the element of spontaneity has been 'screened out.'"¹

Clinical science is less structured in that sick people are not necessarily predictable. Diagnostic assessment depends upon accurate observation and description, requiring meticulous acquisition and logical use of evidence. Despite this, bits and pieces of a patient's presentation may be observed and discarded or not consciously observed at all because they do not seem to fit an expected pattern. Enhancement of capacity for observation leads to better understanding of a clinical problem; the ability to describe what is observed still gets physicians through the day despite lack of clear basic science understanding of the primary causes for cancer, diabetes mellitus, and atherosclerosis.

As an example of a refined technique of observation, one may consider a verse form called *haiku* which arose in Japan about the thirteenth century. This imagistic poetry is characterized by acuteness of observation, subtle symbolism, and emotional tone.

The poems are brief, usually made up of 17 syllables, depending much on the power of suggestion by drawing a verbal outline of the situation. The season of the year is often stated or implied as a universal backdrop to a description which employs a natural phenomenon to reflect human emotion.

Examples from a few acknowledged masters of the form follow:

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In my new clothing
I feel so different; I must
Look like someone else.
(Basho, 1644-1696)²

Now that I am old
Even tender days of Spring
See . . . can make me cry.
(Issa, 1763-1827)³

The All-Souls-Feast-Dance!
Afterwards murmuring pines
And insect voices.
(Sogetsu, 1759-1819)⁴

The piercing chill I feel;
My dead wife's comb, in our bedroom,
Under my heel.
(Buson, 1715-1783)⁵

Haiku often seem effortless and astoundingly empty of logical thought. Henderson quotes Shiki (1866-1902) as saying that Haiku "are not logical propositions, and no process of reasoning should show on the surface."⁵ Descriptions of naturally observed scenes or events are used to echo an emotional undercurrent:

A lightning flash:
Between the forest trees
I have seen water.
(Shiki)⁵

By the roadside grew
A rose of Sharon. My horse
Has just eaten it.
(Basho)⁴

A beautiful kite
Rose from
The beggar's hovel.
(Issa)⁶

The image conveyed is often so powerful that only its briefest outline is necessary:

The old pond:
A frog jumps in —
The sound of water. (Basho)⁶

The sea at springtime;
All day it rises and falls,
Yes, rises and falls.
(Buson)⁴

There is need for development of such "non-logical" observational skills in clinical practitioners. Diagnostic hints sometimes surface in a patient's history only serendipitously — or do they? Could busy clinicians become more alert to less-than-conscious perceptions arrived at "without thinking?"

A study of clinical neurologists compared their diagnostic assessment habits with those of a neurology house staff. Considerable difference was found in problem-solving techniques. Students and residents tended to think of a differential diagnosis in one or more of the "seed catalog" approaches in which they had been taught. An experienced clinician, "not unlike a sculptor with a lump of clay, . . . takes the three to five vague shapes that have popped into his mind early in the interview and begins to see which ones can be more clearly shaped by data derived from his inquiry into acceptable solutions to the patient problem before him."⁷

More intensive exposure during our formative years as physicians (or in continuing medical education) to the arts perceived as less logical than medicine, might help us to become better observers.⁸ A musician or poet can teach us methods of observation not at all analytical, but perfectly useful clinically. Physician-poet William Carlos Williams wrote of observations of patients at its best, as a point at which "we begin to see that the underlying meaning of all they want to tell us and have failed to communicate is the poem, the poem which their lives are being lived to realize. . . . The poem springs from the half-spoken words of such patients as the physician sees from day to day. He observes it in the peculiar, actual conformations in which its life is hid. Humbly he presents himself before it, and by long practice he strives as best he can to interpret the manner of its speech. In that the secret lies. This, in the end, comes perhaps to be the occupation of the physician after a lifetime of careful listening."⁹

Acknowledgment

Thanks are expressed to Paul C. Royce, M.D., Ph.D., for helpful criticism.

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Charles R. Peterson, M.D., Minneapolis, receiving the outstanding manuscript published in 1983 award from Richard L. Reece, M.D., Editor-in-Chief of MINNESOTA MEDICINE. H.K. Helseth, M.D. the co-author of the paper "Survival after Valve Replacement Surgery" was unable to be present at the presentation made before the House of Delegate's meeting in May. (Photo by Deborah A. Weiner, Park-Nicollet Medical Foundation — by permission.)

History

Hippocratic Medicine

RAYMOND C. BONNABEAU, M.D.*

ALTHOUGH WESTERN medicine claims Hippocrates as its "father," and much is known about the medicine of the time, very few facts are known about the man himself.

Born approximately 460 B.C. on the island of Cos in the Aegean Sea, Hippocrates came from a long line of priest/physicians, dying on Thessaly in the year 377 B.C. The books attributed to him were not written solely by him, but is a compilation of many authors. Similarly, the oath that is still sworn to this day by graduating medical students probably did not originate with him, but is basically a religious text, probably Pythagorean in origin.

Hippocrates practiced medicine on the island of Cos and was closely associated with its medical school. There were other schools at this time, one of the most famous being situated at Cnidus, on the nearby Asiatic mainland. These two schools had different characteristic outlooks regarding disease and how it ultimately affected the patient. The teachings of Cnidus had a rather narrow view, laying great stress on diagnosis. It was much more "localistic" in disease description, and thus anatomic areas of disease were stressed. There were, for instance, seven disorders of bile, and twelve of the bladder. This tendency to localize a disease to a specific anatomical area was probably due to Mesopotamian influence.

Sickness, however, was seen more as a general condition by the Coan school, whose teachings were of a much broader character. To them it was considered a process that upset the overall health of the individual, and involved the patient as a whole person. Consequently, the Coan medical school placed more emphasis on prognosis than the Cnidian school did. Prognosis to the Hippocratic (Coan) physicians was considered important for three reasons:

1. It gave the physician an enhanced reputation in the eyes of the patient, since he was able to predict, hopefully in a correct manner, what would happen to the patient in the future. Thus, the patient placed more trust in him.
2. The patient's treatment became easier, because the physician could predict the direction the disease would take.
3. If a physician could predict those patients who

would not do well or in fact die, and he could make this known early-on in the disease, no blame would be attributed to him if the outcome was a fatal one.

Hippocratic Theory

The Hippocratic theory of disease revolved around a disruption of the bodily humors. This theory, which influenced medicine until the middle of the last century, had its origin in final form in the treatise, "The Nature of Man," in the Hippocratic corpus. Although three of the eventual four humors, bile, blood, and phlegm, had been "known" before this, black bile was added at this time and the four cardinal humors of blood, phlegm, yellow bile, and black bile emerged.

These four humors were felt to be responsible for the health or the disease of the individual. When a state of health existed, the Greek desired norm, then all the humors of the body were felt to be in proportion (eucrasia), or of a proper mixture (crasis). If an imbalance occurred, then there was a dyscrasia or an abnormal mixture of humors, and the result was sickness.

It was also felt that environmental as well as other influences played an important role in the development of ill health. Thus, when it was "not easy" for a person to overcome obnoxious environmental factors, he became ill and this was known as "dis-ease." Environmental concerns were such entities as the wind, geographical location, foods, water, as well as the seasons with their different weathers. Inherited characteristics as well as "bad habits" were also felt to contribute to humoral dyscrasias, and therefore to disease.

Why were these four materials chosen as humors? Probably because they were tangible. They could be seen and touched. Thus, they were the stuff of everyday experience, and could also be perceived to be related to the seasons of the year. The humors, were ultimately related not only to man, but to the universe as well, thereby integrating all into one harmonious whole.

Winter, which was usually cold and wet, precipitated in Hippocrates' time, as now, colds and respiratory diseases. People who were ill with this malady had a large amount of phlegm discharged

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from their noses. Thus, phlegm, one of the humors, was felt to predominate during this period to time. Since phlegm was cold as well as wet, its qualities corresponded to the winter season of the year. During the springtime rain was common, so this season was considered to be wet and, since nearer summer, hot. The humor blood started to dominate during this time. Blood was seen to be wet as well as hot, and therefore seemingly corresponded to this season of the year. Dysenteries were common and in severe cases, the diarrhea was bloody. During summertime yellow bile, considered hot and dry like the season itself, predominated. Bilious fevers, during which bile was vomited, were common, while many patients also became jaundiced due to typhoid fever and malaria. During autumn, the air became cold and dry. This corresponded to black bile, which originated within the spleen. At this time of year, tertian (*Plasmodium vivax*), as well as malignant tertian (*Plasmodium falciparum*) malaria occurred in epidemic proportions. These diseases produced jaundice, black stools, and dark-colored urine. Malaria also produced a very large spleen, which was easily palpable. (The number of people with enlarged spleens is an index of the amount of endemic malaria.)

These qualities matched the four elements which Empedocles claimed composed the universe. Thus, winter and phlegm were related to the element water (moist and cold), while spring and blood related to air (hot and moist), summer and yellow bile to fire (hot and dry), and autumn and black bile to earth (cold and dry). Man himself was considered a small universe who had become an integral part of the total cosmos, *ruled not by the gods*, but by a universal set of laws.

“Physis”

Every practicing physician has seen patients who have seemingly recovered on their own. This is true even with today's high-priced trauma centers, open heart machines, and drugs. This enigma of the patient recovering with little treatment was a real one to the Greek physician. There appeared to be “something” in the sick patient that allowed him to throw off the ravages of a particular illness, even in cases where death at one time seemed imminent. They felt this was due to a vital biological principle, “physis.” Although translated “nature,” it really has no counterpart in the English language. It might be termed possibly “health,” but it means more than this. It means the governing nature or principle which is active in keeping the individual healthy in all aspects. It implies all the inherited as well as acquired characteristics of the bodily mechanism that allow the

organism as a whole to sustain a state of well-being. Thus, if we could look at health and disease as a sliding scale from 1 to 10, where 1 is the ultimate in health, the more the body functions in a harmonious manner, i.e., the more “physis” predominates, the closer the degree of health moves toward 1. The less it functions in this manner, the closer it would move towards 10, or to what the Greeks would have considered clinical disease. The crux of the term “physis,” however, is the fact that the body acted as a *whole, an integrated unit*. This concept is extremely important, since it not only separated the Coan from the Cnidian school, but also from more recent developments in medicine, especially over the last 100 years. During this later period, improvements in all aspects of laboratory medicine have tended to segregate and departmentalize patients, along with specialties and subspecialties into different clinical entities. In short, patients have been dissected. A recent emphasis in the family practice physician specialty has been a return to the Hippocratic treatment of the patient as a total person.

Humors had to be assimilated from food, or to be expelled when in excess. This was done in order to keep the body in balance, to maintain the bodily “physis.” Something active had to exist to accomplish this. This something was termed the “innate heat.” This was the Greek equivalent of our basal metabolism, and was unable to be seen, just as is ATP, ADP, and the cytochrome system, and had its origin in the left ventricle. This hotness necessitated breathing and respiration, which actively cooled down the left side of the heart, and explained the increased need for food in the infant (where the heat was the greatest), as well as the decreasing amount needed in the older person (where it diminished). The innate heat was an integral part of a man's nature, or of his “physis,” the driving force that restored and maintained the humoral balance. It did this by a process called concoction, i.e., cooking (pepsis). This concocting cooked the faulty matter, and expelled it.

Knowing this working theory explains some of the seemingly nonsensical treatments of that time and, for that matter, for the next 2,000 years, during which the theory held sway in one form or another. These treatments were used to restore the disruptive humors to normal, and help the innate heat do its job of expulsion. Thus, bleeding reduced a disease felt to be due to an excess of blood, while a choleagogue, or a cathartic would help reduce the amount of excess bile. It would also tend to explain why cathartics were used in cases of severe diarrhea. As the illness pro-

gressed, this excess humor could or would not be expelled by the innate heat. If it was rapidly removed, then the disease healed by "crisis," or if more slowly then by "lysis." In acute disease, this was accomplished best on critical days. These days were numbered and had a mystical significance, reflecting a Mesopotamian as well as a Pythagorean influence.

The humoral theory remained with Western medicine into the mid-nineteenth century when Rokitsky, the famous Viennese pathologist, used the idea

and attempted to explain the pathology of disease on this basis.

Theophrastus

Aristotle's successor, Theophrastus, used this theory to determine personality types on the basis of humoral excess. To this day, one can be sanguine (an excess of blood), or choleric (an excess of yellow bile), phlegmatic (an excess of phlegm), or one can be melancholy due to an excess of black bile.

University of California

October 16-18, 1984. Primary Care: Selected Infectious Diseases. Kauai, Hawaii. Credit hours: A.M.A. 11½ Category 1. Fee: \$225 to August 15, then \$275. Sponsors: Health Science Seminars and Extended Programs in Medical Education, University of California, San Francisco. Contact: Cynthia Vaughan, P.O. Box 22023, San Francisco, CA 94122; or call (415) 861-2713.

Physicians in the News

Dr. Shelley N. Chou of Minneapolis, Minnesota, was selected by the American Association of Neurological Surgeons (AANS) as its new vice-president at their recent annual meeting in San Francisco.

Lloyd C. Bartholomew, M.D., Rochester, was honored May 12, 1984, when he was chosen to receive an honorary Doctorate of Humane Letters from Green Mountain College, Poultney, Vermont. Dr. Bartholomew serves as an AMA Delegate, vice president of the Physicians Philanthropic Foundation of the MMA and as chairman of the Medical Student Financial Assistance Program.

Jeffrey McCullough, M.D., deputy executive director of St. Paul Red Cross, received the Charles Drew Award May 14 at the national Red Cross convention in San Antonio, Texas. The award is named for the late Dr. Charles Drew, a Red Cross physician and researcher who pioneered blood collection and plasma processing techniques.

Dr. Frank E. Johnson is Recipient of Charles Bolles Bolles-Rogers Award

Frank E. Johnson, M.D., has been named the 1984 recipient of the prestigious Charles Bolles Bolles-Rogers award, an honor that has been bestowed on selected physicians since 1952. It is given to the person who through medical research, medical achievement or leadership is selected by his fellow physicians as an outstanding member of the medical profession. Dr. Johnson was honored at special ceremonies in June and will be again in September by Metropolitan Medical Center and the Hennepin County Medical Society.

Not only has Dr. Johnson been a leader in his specialty of thoracic and cardiovascular surgery, but he has also been one of the premier forces in guiding the medical profession through difficult times of change on many fronts.

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The VA GRECC Program

Study of the Aging Nervous System

GABE J. MALETTA, PH.D., M.D.*

The Minneapolis GRECC is one of 10 at VAs located throughout the nation. It is designated as a center for the study of the aging nervous system. Research, education/evaluation and clinical activities are carried out by a multidisciplinary group of professionals interested in the best care possible for the elderly veteran.

THE GERIATRIC RESEARCH, Education and Clinical Center (GRECC) at the Minneapolis Veterans Administration Medical Center was established by the Veterans Administration in the Fall of 1977 and is one of only eight in the nation. It is designated as a center for the study of the aging nervous system. Each GRECC is located in a university-affiliated VA Medical Center and focuses on a different problem in aging; including: immunology, learning and memory, diabetes and other metabolic diseases, and cardiovascular disease in the elderly. At the Minneapolis GRECC, the causes of brain dysfunction in the elderly are examined with particular emphasis on differential diagnoses of unusual behavior, i.e., delirium vs. dementia vs. depression or other functional disorder. The relationship between cognition and movement disorders is also studied in patients with Parkinson's Disease. Finally, the important role of the family in the care, treatment and management of these disorders is identified and stressed.

The clinical staff of the Minneapolis GRECC includes professionals from many specialties, including a psychiatrist, neurologist, internist, neuropsychologist, and clinical nurse specialist. This approach provides a multidisciplinary approach to the diagnoses and treatment of the elderly individual with cognitive dysfunction. There are also professionals associated on a part-time basis, including physicians, a social worker, nurses, and a research biochemist.

The GRECC Program is separated into three sections, i.e., the research program, the education/evaluation program and the clinical program, each with its own director. The very active research program addresses questions of both clinical and basic interest concerning Alzheimer's disease, Parkinson's disease and normal aging. Funding for the research efforts comes from a variety of sources, both federal

and private, and includes the Veterans Administration and the National Institutes of Health. For the past two years, GRECC investigators have been studying, from an epidemiologic approach, factors that may increase the risk of Alzheimer's disease. This National Institutes of Health sponsored study may offer some of the first clues concerning the cause of this terrible affliction that affects some two million Americans. One preliminary finding from this study suggests that there is a direct relationship in individuals between severe head trauma and prevalence of Alzheimer's disease later in life. A number of other studies are underway in the GRECC program to examine the usefulness of various psychophysiologic indicators to distinguish early Alzheimer's disease from depression in the elderly veteran. This critical differentiation between the various dementing illnesses and depression in the elderly patient is a major diagnostic problem in medicine. Recent findings from a psychological study of Parkinson's patients who suffer from intellectual problems as well as motor dysfunction may be higher than previously expected. Also, a close relationship has been demonstrated between those Parkinson's patients who present with akinesia and the increased prevalence of dementia as compared to those Parkinson's patients with tremor who do not become demented as the disease progresses. Normal aging studies, including basic research on structure and biochemistry in human and animal brains, as well as studies of behavioral changes in the elderly veteran, are being performed as part of the GRECC research program. To aid the research program in the GRECC, the development of a computerized data system for collecting and analyzing a variety of medical information from patients with Alzheimer's Disease and also those patients with Parkinson's Disease has recently been completed. This data base will permit systematic studies of the natural history of large populations of veterans at the Minneapolis GRECC as well as patients at the Uni-

*Currently Program Director of the Geriatric Research, Education and Clinical Center (GRECC) at the Minneapolis VA Medical Center, Assistant Professor in the Departments of Psychiatry and Neurology at the University of Minnesota School of Medicine, and Consultant in Psychiatry and Psychopharmacology for the State of Minnesota.

versity of Minnesota and other cooperating institutions, including St. Paul Ramsey Hospital.

The educational program of the GRECC has developed conferences on national, regional and local levels. The intent of these conferences is to bring together research findings and clinical experiences in an attempt to increase the understanding of the aging nervous system, as well as to consider the resulting implications for improving patient care. In addition to the frequent conferences, there is an on-going bi-monthly seminar series held at the VAMC that provides a continuing forum for individuals from the hospital, university and community interested in aging issues. Speakers at the seminars are experts in the field of aging representing institutions from this country and abroad. The GRECC educational program cooperates with the VA's North Central Regional Medical Education Center (NCRMEC), also located in Minneapolis, as well as the All-University Council on Aging at the University of Minnesota, and the Geriatric Medicine Coordinating Committee at the University of Minnesota.

The clinical program of the GRECC is a multidisciplinary one and focuses on the assessment, diagnoses, treatment, management and follow-up of aging veterans demonstrating cognitive or behavioral disorders. Referrals come to the clinical program by the patients themselves, or from family members, local community health services and also from the various inpatient bed services, admitting, and other outpatient departments of the VA Medical Center. The clinical service is composed of a weekly GRECC outpatient clinic and a ten-bed diagnostic and demonstration inpatient unit — as part of the larger 46-bed Geriatric and Restorative Care Unit, unique to the Minneapolis VA Medical Center. There is also a liaison-consultant service that provides its expertise in geriatric diagnoses to all the relevant inpatient bed services at the Medical Center. Following diagnosis, a treatment plan is developed and provided and referral is then

made to the appropriate caregiver, either a local physician, another clinic in the hospital or in the community, or perhaps a family member. The clinical team also follows a certain number of those patients who are difficult to refer in order to observe disease progression for clinical and teaching purposes. A major effort of the clinical program has been to develop a counseling program for patients and/or their families. Frequently, family members are seen around the time of placement of the severely demented patient, a particularly difficult and stressful time for family members. Stresses on family members who must constantly care for an individual with a progressive dementia are enormous, and the need for therapy and counseling for these individuals is high.

Another major activity of the clinical program includes student teaching. Medical, nursing, psychology and pharmacy students, both pre- and post-doctoral, regularly rotate through the GRECC outpatient unit, with dietetics, social work and occupational therapy planned for future rotations. The major emphasis is to expose these students to cognitive and behavioral abnormalities in the elderly patient, a segment of the population that is growing at an alarmingly rapid rate. At the present time there are 26 million individuals in the United States over 65 years of age — 11.7% of the population. By the year 2025 there will be approximately 56 million individuals in the United States, approximately 20% of the population at that time.

It is through the multidisciplinary approach of the GRECC program that optimum understanding will occur in the normal aging brain. Also, a better understanding of the cognitive and behavioral dysfunctions of the elderly can take place in this multi-professional atmosphere. It follows that, given the most appropriate assessment and diagnosis, the most effective treatment and follow-up program can be designed by GRECC staff to care for the aging veteran and family suffering from disorders of the nervous system.

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References:

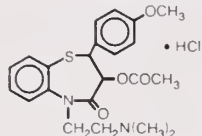
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PROFESSIONAL USE INFORMATION



DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)-one, 3-(acetoxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-[4-methoxyphenyl]-, monohydrochloride, (+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. **Angina Due to Coronary Artery Spasm:** CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect, cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS AND ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.3%), asthenia (1.2%), AV block (1.1%). In addition, the following events were reported infrequently (less than 1%) with the order of present tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and amnesia.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vomiting, mild elevations of alkaline phosphatase, SGOT, SGPT, and LOH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted:
A patient with Prinzmetal's angina experiencing episodes of vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single 60-mg dose of CARDIZEM.

The following postmarketing events have been reported infrequently in patients receiving CARDIZEM: erythema multiforme, leukopenia, and extreme elevations of alkaline phosphatase, SGOT, SGPT, LOH, and CPK. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.60 to 1.0 mg). If there is no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed high degree AV block should be treated with cardiac pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levaterenolol bitartrate).

Actual treatment and dosage should depend on the severity of the clinical situation and the judgment and experience of the treating physician.

The oral LD₅₀'s in mice and rats range from 415 to 740 mg/l and from 560 to 810 mg/kg, respectively. The intravenous LD₅₀'s in these species were 60 and 38 mg/kg, respectively. The oral LD₅₀ dogs is considered to be in excess of 50 mg/kg, while lethality was seen in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals and bedtime, dosage should be increased gradually (given in divided doses three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients may respond to any dosage level, the average optimum dosage range appears to be 180 to 240 mg/day. There are no available data concerning dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

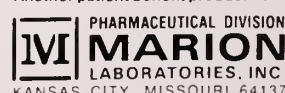
1. **Sublingual NTG** may be taken as required to abort acute anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be safely coadministered with short- and long-acting nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (N 0088-1771-47) and in Unit Dose Identification Packs of 100 (N 0088-1771-49). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg score tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Unit Dose Identification Packs of 100 (NDC 0088-1772-49). Each yellow tablet is engraved with MARION on one side and 1772 on the other.

Issued 4/1/77

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Book Report

MAYO CLINIC: ITS GROWTH AND PROGRESS, by V. Johnson, 369 pp., with illus., \$17.50, Bloomington, MN, Voyageur Press, 1984

The Mayo brothers often refereed to the "adventure in medicine" which they began with their father in Rochester, Minnesota. The unfolding of this adventure transformed a small-town medical practice into the Mayo Clinic, the Mayo Foundation, the Mayo Graduate School of Medicine, and the Mayo Medical School. The Mayos' spirit of adventure lives on in the people and the facilities that comprise this present-day medical center. These stewards of "a private trust for public purposes" are committed to the goal of the founders — "to . . . heal the sick and to advance the science."

In 1931, on his 70th birthday, Dr. William J. Mayo was honored by the American Surgical Association at a meeting in San Francisco. The following passage from his response to that group for their recognition illustrates some of the sharing philosophy of the Mayos.

Each day as I go through the hospitals surrounded by younger men, they give me of their dreams and I give them of my experience, and I get the better of the exchange . . .

And on another occasion, he said: "What a man may do with his own hands is small compared with what he can do to implant ideals and scientific spirit in many men who in endless chains will carry on the same endeavor."

Over the years, many have shouldered this torch of responsibility so well that today Mayo is truly, as the *Encyclopaedia Britannica* says, "the standard against which all other clinics are judged." The ensuing dénouement has evolved a system of practice with greatly reduced surgical mortality, the introduction and application of advances in knowledge and practice, the intimate group practice consultation of specialist with specialist, an unusually large following of patients, a large alumni cadre of trained physicians and surgeons, world renown and respect, and, in general, the finest medical care available at reasonable cost.

Since Helen Clapesattle's book *The Doctors Mayo*, published in 1941, there has been no complete coverage of Mayo Clinic history. In *Mayo Clinic: Its Growth and Progress*, Doctor Victor Johnson has

done a remarkably good job of narrating, from where Clapesattle left off, "the rest of the story" to the present. This new history is pleasantly arranged, is utilitarian in design, has a highly readable format, seems remarkably free of authorial lapses, is interesting — and, most importantly, makes a worthy contribution to the chronicle of the world-famous Clinic.

Doctor Johnson presents his saga in a personalized manner and from the perspective of several decades of responsible association with the Mayo Clinic. The book is divided into three main sections. Section I, "The Clinic Revealed," deals with the early 1940s and introduces the setting for the book. Section II, "The Mayo Clinic Grows," records the major Clinic developments from 1947 through 1966. During this period there were tremendous advances in organization, patient care, medical education, and scientific investigation. Section III, "The Mayo Clinic Today," covers the present-day (1982) Mayo Institution with its tremendous expansions in facilities and activities. Included is the development of the undergraduate medical school as a major adjunct to Mayo's continuing dedication to the triad of patient care, medical education, and scientific research. There is also a good index.

The number of topics covered has necessitated some brevity. This can be understood considering the exigencies of the publishing world, but is at the same time regrettable in at least one instance — and that is, while noting in a very general way the sources of information, the lack of a detailed bibliography will present a problem for the serious student of Mayo Clinic history.

Mayo Clinic: Its Growth and Progress should prove to be of considerable interest for those who enjoy history and who like to read about those whose accomplishments have helped build important institutions. Like other disciplines history has a mission. It not only teaches us about things of the past but also suggests, if only by implication, of things to come. Doctor Johnson has written a good book. It is a work of history and it is a history the reader will enjoy.

Jack D. Key, M.A., M.S.*
Rochester, Minnesota

*Librarian, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

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CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

July, 1984

22-27 Medical Treatment Update for the Family Physician; North Memorial Medical Center; Plummer's Great Slave Lake Lodge — Canada; CONTACT: Joseph Bocklage, M.D., 608 Oakdale Medical Bldg., Robbinsdale, MN 55422; 612/588-9478.

July 30 — August 1, 1984 Pediatric Orthopaedic Surgery; Office of CME, U of M; Hyatt Regency, Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Building, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

August, 1984

2-4 Oncology for the Practicing Obstetricians & Gynecologists; American College of Obstetricians & Gynecologists; Hyatt Regency Hotel, Minneapolis; CONTACT: 202/638-5577.

9 A Physician's Guide to Workers' Compensation; Minnesota Medical Association Ad Hoc Committee on Workers' Compensation; Radisson Hotel, St. Paul; CONTACT: Eugenia Kassir, MMA, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414; 612/378-1875.

20-22 The Knee: Current Concepts of Treatment & Techniques; American Academy of Orthopaedic Surgeons, The Kahler Hotel, Rochester, MN; CONTACT: 312/822-0970

20-22 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

24-25 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN; CONTACT: Kari Ebert, 612/221-3991.

August 26-September 1 Transplantation Society Congress; U of MN Medical School, Mpls., MN; CONTACT: Bart Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012

27-28 Basic Life Support Course, Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

September, 1984

2-3 Annual Meeting, MN Orthopedic Society; Winnipeg; CONTACT: Jack M. Bert, M.D., 307 Gallery Medical Bldg., 17 West Exchange St., St. Paul, MN 55102.

10-14 47th Annual Radiology Course: Radiology/84 — Thoracic Imaging; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

10-21 Second Annual Graduate Occupational Health & Safety Institute; Univ. of MN Medical School; St. Paul-Ramsey; CONTACT: Ruth McIntyre, Assoc. Director, CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980

13-14 Urology Update for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

13-14 Medical Directors Conference; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-15 Orthopaedic Nursing in the 80's — New Concepts and Challenges; Metropolitan Med. Center & Hennepin County Med. Center; Pillsbury Auditorium; CONTACT: Rose Jagodzinski, 701 Park Ave. So., Mpls., MN 55415, 612/347-2812.

14-15 Common Problems in Cardiology; Park Nicollet Medical Foundation; CONTACT: Elaine Anderson, 5000 W. 39th St., Minneapolis, MN 55426; 612/927-3703.

15 New Developments in Anxiety Relating to Medical Illness; North Memorial Medical Center; Vance C. DeMong Auditorium, North Memorial Medical Center; CONTACT: Molly Kunding, Dept. of Education, 3300 Oakdale Avenue North, Mpls., MN 55422, 612/520-5455.

17-19 Topics in Geriatric Medicine: Management of Alzheimer's Disease; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

September (continued)

17-19 Triennial International Symposium on Male Sexual Dysfunction; Mayo Clinic/Mayo Foundation, 200 First St. SW, Rochester, MN 55905; CONTACT: William L. Nietz.

19 Impotence and Penile Implants; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20-22 7th Annual Trauma & Critical Care Seminar; University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

21-22 Advanced Trauma Life Support; University of MN-Duluth Medical School; CONTACT: C. L. Barbee, M.D., 1000 E. First St. — Suite 203, Duluth, MN; 218/727-7259.

22 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700 ext. 1117.

28 Problems in Family Practice; The Duluth Clinic, Ltd; Holiday Inn, Duluth; CONTACT: J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805; 218/722-8364.

28 Northwestern Pediatric Society Meeting; Northwestern Pediatric Society; Chanhassen Dinner Theatre, Chanhassen, MN; CONTACT: Fredric Kleinberg, M.D., Dept. of Pediatrics Mayo Clinic, Rochester, MN 55905; 507/284-2922.

October 1984

1 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3-5 Annual Internal Medicine Review Course: Endocrinology, Cardiology and Hematology; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

4-13 Advance Cardiac Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189.

7-20 Principles of Colon and Rectal Surgery; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware Street, SE, Mpls., MN 55455; 612/373-8012.

11-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

12 6th Annual Adolescent Medicine & Health Care Conference; Adolescent Sexuality; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

13 Current Trends in Ophthalmology — 8th Annual; Mount Sinai Hospital; Hotel Sofitel, Bloomington; CONTACT: Nancy Pasell, Mount Sinai Hospital, 2215 Park Avenue, Mpls., MN 55404; 612/871-3700, Ext. 1117.

18-20 The 17th Annual Orthopaedic & Trauma Seminar; Hennepin County Medical Center, Pillsbury Auditorium, 701 Park Avenue So., Mpls., MN; CONTACT: Ramon B. Gustilo, M.D., 701 Park Ave. So. 813, Minneapolis, MN 55415.

24-26 Annual Autumn Seminar in Obstetrics & Gynecology; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455; 612/373-8012.

25-27 Emergency Medicine for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical School; CONTACT: Ruth K. McIntyre, Assoc. Dir. CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

26-27 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN. CONTACT: Kari Ebert, 612/231-3991.

27-28 Update in Cardiology; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

29-31 Clinical Reviews; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

31 Infections in the Elderly; Hennepin County Medical Center; Minneapolis, MN 55415; CONTACT: R.B. Breitenbucher, M.D., 701 Park Ave. So., Mpls., MN 55415; 612/347-2323.

November, 1984

2 Stroke Care Update — 1984; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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FAMILY PHYSICIAN wanted, board certified or eligible, to join two young family physicians in a growing family practice group. New facility. Northfield is a small attractive college town (St. Olaf and Carleton) and is less than one hour from the Twin Cities and Rochester. Contact: Kenneth Sansome, M.D., or David Larson, M.D., Family Physicians of Northfield, 505 W. Woodley, Northfield, MN 55057; (507) 663-1261.

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(Continued on page 402)

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FAMILY PRACTICE, Forest City, Iowa; home of Winnebago RV industry; college community of 5000. To be 3rd FP in expanding satellite office of multi-specialty group 30 miles away. OB/Peds interests preferred. New municipal hospital. Excellent financial package. Great family community with superb education, much recreation, close to large lake nearby. Send c.v. and photo to Administrator, Park Clinic, 890 North Eisenhower Ave., Mason City, Iowa 50401. Info by return mail.

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FAMILY PRACTICE PHYSICIAN — Wanted to join a 16 physician multi-specialty group in Robbinsdale, Minnesota, located next to North Memorial Medical Center. Fringe benefits are excellent and salary is very competitive. A second satellite office is also located in Maple Grove. The clinic is also a provider for three HMOs. Please contact clinic manager at North Clinic, P.A., 3210 Lowry Avenue North, Robbinsdale, Minnesota 55422, telephone (612) 588-4625.

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(Continued to page 404)

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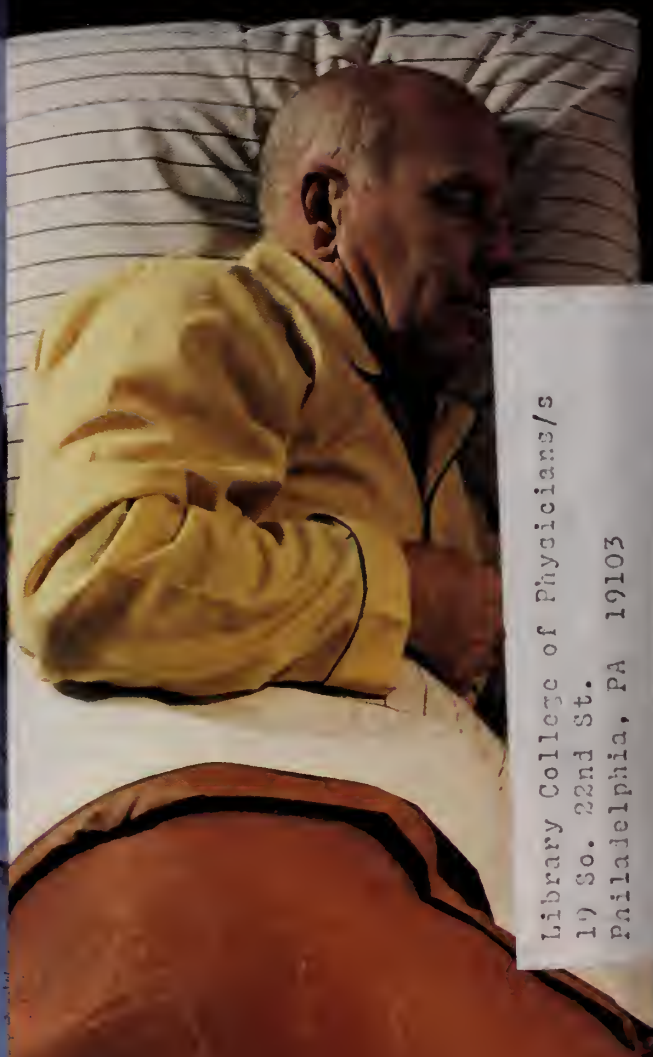
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President's Letter



Sexual Abuse and Other Violence against Children

Child and adolescent abuse can take many forms, from the fetal alcohol syndrome in the unborn, to threats and intimidation in the adolescent, to sexual stimulation and physical injury of infants and children.

The National Center on Child Abuse and Neglect (NCCAN) defines child sexual abuse as "contacts or interactions between a child and an adult when the child is being used for the sexual stimulation of that adult or another person," with adults being defined as somebody 18 years and older.

The national incidence of child abuse varies, as you might guess, because of inadequate reporting. In 1981, 850,000 cases of child and adolescent abuse were reported. The U.S. Department of Justice Survey found an average of 456,000 cases of family violence per year, and this is said to be seriously understating the problem. The NCCAN estimates more than 100,000 cases of sexual abuse annually. Wayne Jennings, Ph.D., Director of St. Paul Consortium of Child and Adolescent Abuse Services, reported about 600 cases referred to his agency in the first six months of 1984.

In Hennepin County only 2.6% and in Ramsey County only 1.5% of reported cases of child abuse were reported by physicians. Over 35% of officially reported cases in Ramsey County are middle income and above families. Recent public information on the Cermak case, Children's Theatre and the McMartin Day Care Center on Manhattan Beach, California, has increased public awareness of this problem.

Other than teachers, we as physicians, see more children than any other profession.

There has been an increasing awareness amongst employee assistance programs because of its effect on the work place. It is obvious that we need to know more. We need to be aware that it happens. We need to know that it is not confined to the economically

disadvantaged. We need to know what signs to watch for. We need to know what help is available for the victim and the perpetrator.

Physicians should be alert to possible abuse when presented with the following symptoms:

1. Bedwetting
2. Severe nightmares
3. Explicit knowledge of sexual acts
4. Depression
5. Withdrawal
6. Drug and alcohol abuse
7. Hypochondriasis
8. Suicide attempts
9. Poor self-image
10. Truancy
11. Seductive behavior
12. Promiscuous sexual behavior
13. Withdrawal or clinging to family members

Physical signs:

1. Genital or rectal trauma
2. Pregnancy
3. Foreign bodies in the vagina, rectum, or urethra
4. Blood or semen on the clothing
5. Malnutrition and neglect

Oral or Visual Abuse:

1. Threats
2. Indecent exposure

Where physicians have an interest in this area, re-enactment using dolls or drawings or children's friends may help in deciphering whether there is a problem. However, most of us are untrained in this area, and it is wise to get the child and the perpetrator into the help of an experienced counselor. Most instances involve someone the child knows or trusts, such as family members, baby sitters, family friends, or neighbors. Children are easily intimidated by adults.

PRESIDENT'S LETTER

The child is usually defenseless and has no advocate in this situation. We must offer that protection and help to a child. Some victims of sexual abuse are too young to understand that they are being abused and, thus, unable to report. If we become more aware of this problem, we will be able to break this cycle of abuse and prevent the victim from later becoming a perpetrator.

There is help available. It is not widely known, and more help will be needed. The Hennepin County Medical Society Foundation in 1981, supported a program called "Responses To End Child Abuse", now called just "Responses, Inc." Its current chairman is Dr. Robert Maxeiner. Ms. Deborah Anderson, Executive Vice President, has a great deal of experience in dealing with the abused child. This group acts as a catalyst and consortium for groups dealing with victims and perpetrators of child and family abuse. For those physicians seeking more information about a particular case, or who might be interested in having

a seminar, or perhaps seeing the play called "Touch", that the Illusion Theatre produced to show children proper touching (inspired by Deborah), call Deborah Anderson at (612) 722-1189 or write: Health Association Center, 2221 University Ave. S.E., Suite 423, Minneapolis, Minnesota 55414.

To quote Poet Rod McKuen who was a childhood victim of sexual abuse by an alcoholic stepfather, "The only means of prevention that I can think of is everybody who cares for anyone must get involved. Sexually abused children are a defenseless, afraid, misunderstood segment of our society that has no voice of its own."

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association



On May 10, 1984, Harold W. Brunn received the James H. Sova Memorial Award for outstanding contributions to medicine by a layman. Shown with Brunn are Dr. Robert T. Kelly, Grand Rapids, presenting the award, Dr. Delwin K. Ohrt (far left), MMA Board Chairman and Dr. Richard K. Simmons, Minneapolis, MMA Speaker of the House of Delegates (far right).

Harold W. Brunn
32-Year Minnesota Medical Association Executive
Announces Retirement — September 1, 1984



Harold and his wife, Sharon

The following is the commendation resolution introduced by the Minnesota AMA Delegation and read before the AMA House of Delegates at its June, 1984, meeting in Chicago.

American Medical Association House of Delegates
Commendation Resolution
Harold W. Brunn

Introduced by Minnesota Delegation

Whereas, Harold W. Brunn has served the Minnesota Medical Association thirty-two years in various capacities including Executive Vice President; and

Whereas, Mr Brunn has demonstrated loyalty and unparalleled dedication not only to the Association but to organized medicine and individual physicians; and

Whereas, Mr Brunn has brought recognition to the Minnesota Medical Association through his service to national organizations such as the American Medical Association, in which he served on the Advisory Committee to the Executive Vice President, the American Association of Medical Society Executives, in which he served as Secretary and Treasurer, the Professional Convention Management Association, of which he is the current President; and

Whereas, Mr Brunn; has announced his retirement on September 1, 1984;

RESOLVED, That the American Medical Association commend Harold W. Brunn and his wife, Sharon Brunn, for their years of dedicated and faithful service to the practice of medicine and to the physicians of Minnesota and the nation.

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Editor's Notebook

Australia: Inside Out, Upside Down, Down Under, and Outback

The grammar has a rule absurd which I would call an outworn myth: "A preposition is a word you musn't end a sentence with."

Barton Braley, 1882 - 1966, "No Rule to be Afraid Of"

SYDNEY, AUSTRALIA — When a proofreader had the gall to "correct" a Churchillian sentence ending with a preposition, Winston Churchill jotted this note in the margin of his manuscript: "This is the sort of impertinence up with which I will not put."

I trust readers will put up with my impertinence at using six prepositions in one title — and then adding insult to injury by mating two prepositions to form a bastard noun. Well, why not? There's no rule against it, and therefore nothing to be afraid of. Besides, as Winston also noted: "Broadly speaking, short words are the best, and the old words are best of all." That's why the following prepositions, all short and all old, are the best words of all for describing Australia.

Prepositions Describing Australia

Australia, for geographic reasons, lends itself to prepositions. Eighty-five percent of its 15 million people live *inside* its cities or suburbs *out* along its coasts; its southern hemisphere location makes its seasons *upside down*, its winters being our summers and its North being tropical and its South being temperate; its remote location on the opposite side of the Earth from its mother country led to its becoming known as "*Down Under*"; and its size, close to that of the continental U.S., is so massive and indescribable that its people call its sparsely inhabited central no man's land, covering three-quarters of the Australian Continent, as the "*Outback*," "Back of Bourke," "The Red Center," "The Dead Center," "The Dead Heart," or "Beyond the Black Stump." At first viewing, Australia's bush country and desert strikes most visitors as harsh, alien, and abstract. This desolate land resembles another planet with its strange animals, strange plants, and unearthly arid landscapes.

The Australians

But strange, unearthly, and dry, Australians are not. They are as friendly and earthy as anybody you'll meet anywhere; and, to combat their dryness, they rank high in the world in beer consumption per capita. I find them gregarious, amiable, civil, humorous, and, if you'll pardon an outworn expression from another era, "macho." Aussies enjoy bantering with Americans, with whom they feel a kinship. Right now they are still flushed with pride from their triumph in the American Cup Race. Last night we heard the lead singer in a string band belt out lyrics containing this phrase: "Never, never, never, never, never, never again." In short, Americans will NEVER win back their cherished Cup. From the lilt of his lyrics to the sparkle in his eyes, the singer radiated a sunny good humor. As one Australian humorist remarked of his sun-drenched land, "I am now in that part of the British Empire on which the sun never sits."

Sydney and Sydney Harbor

With 3½ million people, Sydney is Australia's largest, liveliest, and loveliest city. In the main, this is because of its magnificent 21 square mile harbor. Travel writers have commented the five most beautiful harbors in the world are Sydney, Vancouver, San Francisco, Rio de Janeiro, and Hong Kong. As one privileged to see all five, I would agree.

What sets Sydney apart and distinguishes and coordinates its special beauty is its stunning Opera House. This structure — designed and started by a Danish architect but finished by a team of Australian architects — was built from 1959 to 1973 at the cost of \$100 million dollars. From the harbor, this spectacular building, with a series of overlapping tile-covered sail-like or shell-like roofs, looks as though it were poised to glide across the harbor. Or, as another travel editor has commented: "It is a gigantic building of soaring imagination, vaguely resembling a monstrous bird in flight; it is handsome, original, fantastic, and also wildly expensive to build."

Historical Ties with America

Australians' kinship with Americans has historical roots. Our American ancestors indirectly helped start Australia as a British colony. After Americans won the Revolutionary War, we informed the British they could no longer deposit their overflow prisoners in Georgia. Prime Minister Pitt and Parliament members, knowing a downer when they saw one, seized upon Australia as a logical alternative to dump human refuse from British prisons. In 1788, after sailing for eight months, a fleet of 11 ships carrying 760 convicts reached Botany Bay near the present Sydney and set up England's first outpost in Australia. By 1868, 150,000 English criminals had been shipped Down Under, transported there at the expense of Her Majesty's Government.

Australians also remember America's role in World War II in saving them from Japanese invasion. They appreciated Americans fighting and dying for them on steamy tropical islands just to the north of Australia. And they realized for the first time they were dependent on this large nation on the other side of the Pacific.

Australia Society

Perhaps because of their country's unconventional beginning and perhaps because of their land's vast opportunities, Australians have established a society where class, rank, birth, and wealth are relatively unimportant. Like Americans, Australians have a dynamic, bustling, and diverse economy. They also have a pluralistic society in which you can be socially upwardly mobile because of what you can become rather than from what social stratum you spring. One government decision that made this opportunity to rise in society possible was the abandoning of the old "White Australia" policy, whereby colored and Asiatic people could not immigrate into Australia. From 1945 to 1963, two million "new Australians" arrived. According to the 1971 census, major ethnic groups include: English, Welsh, and Scots 1,024,000; Asians 167,000; Greeks 160,200; Yugoslavs 129,800; Germans 110,000; Dutch 99,200; Irish 66,000; Africans 61,000; Polish 59,700; Americans 30,000; and Canadians 12,800; Since that census, an estimated 400,000 more immigrants have come. An increasing number of these are from Southeast Asia. For whatever reasons — historic, economic, or immigration — Australia has achieved an egalitarian society. Accompanying this sense of equality is a disdain for authority, a respect for underdogs, and a suspicion of heroes.

Social Welfare Programs

Yet despite the Australians' professed independence of mind and thumbing of noses towards those in authority, their government props up employment and industries with grants, aids, and bounties. Australia introduced (but did not necessarily bring into law

EDITOR'S NOTEBOOK

many of the World's earliest social welfare programs. Old age pensions were introduced in 1909, pensions for invalids in 1910, maternity allowances in 1912, a Royal Commission on National Health Insurance in 1923, a National Insurance Bill in 1927, a National Health and Pensioners' Bill in 1938, a National Health Act in 1953, a Medibank Act in 1976, and a newly enacted Medicare Act in 1984.

Similarities between Health Care Systems

Before I get into details of the new Australian Medicare law, I ought to note similarities between Australian medicine and American medicine. In both systems, medical practice is of high caliber; most physicians work on a fee-for-service basis; and health insurance plans cover most of both populations. Like the United States, Australia is a developed, industrialized, urban country with a well-educated population. Australia devotes about eight percent of its GNP to health care, is deeply concerned about slowing health care inflation, and has a mixture of public and private hospitals. With roughly 27,000 physicians (about 13 percent of whom are women), Australia has about one physician for every 540 people while we have one doctor for every 500 persons.

In Australia in 1980, financing of private medical care was shared in this proportion:

Federal Government	48%
Blue Cross and Blue Shield Type Plans	36%
Individuals and Commercial Insurers	16%

And in that same year, these payers financed hospital care:

Federal Government	37%
State Governments	40%
Blue Cross and Blue Shield Type Plans	16%
Individuals and Commercial Insurers	7%

Australian Medicare

Under Australia's new Medicare system, enacted February 1, 1984, all Australians are subject to a one percent levy to help finance a single national insurance system. Those exempt from the levy include low-income citizens, pensioners, and war veterans receiving disability pensions. Those paying pay up to a ceiling of \$633 U.S. dollars, or one percent of ceiling income of \$63,300 U.S. dollars. Under the new Medicare Law, Australians are: (1) entitled to medical benefits at 85 percent of the government's fee schedules, but physicians may charge their own fee, and patients must pay the difference (80 percent of physicians charge at or below the fee schedule rates); and (2) entitled to access, without charge, to public hospitals, where they may be treated by private physicians or government-employed physicians.

Private Hospitals

If Australians choose to go to a private hospital, they pay out-of-pocket or with private insurance. Physicians, in their turn, may admit to either private or public hospitals. In the case of private physicians admitting to private hospitals, fee arrangements are straightforward. Doctors bill fee-for-service; hospitals bill for accommodations and use of facilities; and doctors and hospitals have no direct financial relationship.

Public Hospitals

But fee and contract arrangements for physicians in public hospitals, which make up four-fifths of Australia's hospitals, are complex and varied.

Variations include: (1) public hospitals may: (a) employ doctors full-time, (b) employ them part-time, or (c) pay them fee-for-service; (2) doctors who work at public hospitals part-time or who are being paid fee-for-service may admit private patients to public hospitals; (3) other doctors, e.g., general practitioners, are accredited by public hospitals

EDITOR'S NOTEBOOK

to treat or to assist in treating their own private patients in the hospital even though they do not treat public patients; and (4) full-time salaried senior specialists in public hospitals have the right of private practice based on these principles:

- (a) hospitals collect the fees for the specialists;
- (b) hospitals deduct the cost of services and facilities, which may vary from 10 percent for clinical services to 90 percent for diagnostic services;
- (c) doctors receive a proportion of collected fees, not to exceed 25 percent of their basic salary; and
- (d) the balance of fees go into a trust fund, which is disbursed roughly as follows:

Hospital Charges	45%
Doctor Payments	35%
Equipment	15%
Travel, Education, and Research	5%

The Public-Private Mix

In essence, then, in Australia, both private and government employed physicians have the right of private practice. Since 80 percent of Australia's 1112 hospitals are government-owned and are staffed by a mix of private and government physicians, this makes for complex, diverse, and controversial relationships between government and physicians.

What was explosive in the new Medicare Law were rigid constraints on the rights of private practice in public hospitals with wide discretionary and potential dictatorial powers for the Health Minister. Under the law, the Minister could, in effect, determine the pay and conditions of employment of doctors treating patients in public hospitals. He could do so with no right of appeal on the part of physicians.

The Threatened Physicians' Strike

Two days before our group stepped off the plane at Sydney, the Australian Medical Association asked members to withdraw all emergency services from public hospitals. In the more conservative and militant parts of Australia, physicians had already been on strike for two months. In Sydney, three weeks before physicians had initiated "rolling strikes" one day a week. And in Canberra, the capital of Australia, doctors had already been on strike for a month.

What hits me, as I read the Australian papers and watch the local television, is the intensity of the contest for public favor between the government, led by its Health Minister, Neal Blewett, Ph.D., and the Australian Medical Association, led by Lindsay Thompson, M.D. Organized medicine is vigorously taking its case before the public through the media, particularly in newspaper advertisements. This may be a good strategy, for the Australians are the most inveterate newspaper readers in the world.

Campaign and Compromise

As I write, the physicians' campaign for public sentiment is gaining legitimacy among the people, who, although inconvenienced by the rolling strikes, seem to view the doctors as the underdogs in the struggle against Big Government. The Health Minister is clearly on the defensive, and physicians are confident enough to assert they are going to take their case before Australia's High Court for a constitutional challenge.

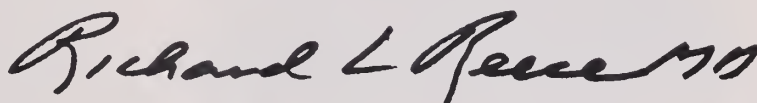
A last minute conference between the AMA (Australian Medical Association) and the government has produced compromises that have prompted the AMA to call off the strike. In return, the government has agreed to restrict its fee and work conditions constraints to the services of hospital specialists such as radiologists, radiotherapists, and pathologists; to exclude clinicians from these constraints even though they may offer technical diagnostic services; and to set up an inquiry committee to work out the rules,

EDITOR'S NOTEBOOK

arbitration procedures, and appeal mechanisms between the government's Health Ministry and the Australian Medical Association.

Striking Conclusions

To me the conclusions to be reached from this Australian experience are these: (1) an organized national medical association has a powerful role to play in negotiations with a government that hands down arbitrary rules; (2) when physicians go public with complaints, they have a chance of turning public opinion in their favor and therefore achieving compromises with the government; and (3) I can easily see that if DRGs, which are essentially fixed government fees for specific diagnoses, are extended from hospitals to physicians, strikes could ensue in America.



Acknowledgment:

I would like to thank Lindsay Graham, an Australian now at InterStudy and formerly a Special Projects Manager for Australia's Health Insurance Commission, for talking to me about the Australian system and for providing me with his paper, "An Outline of the Australian Health Care System."

Physicians in the News

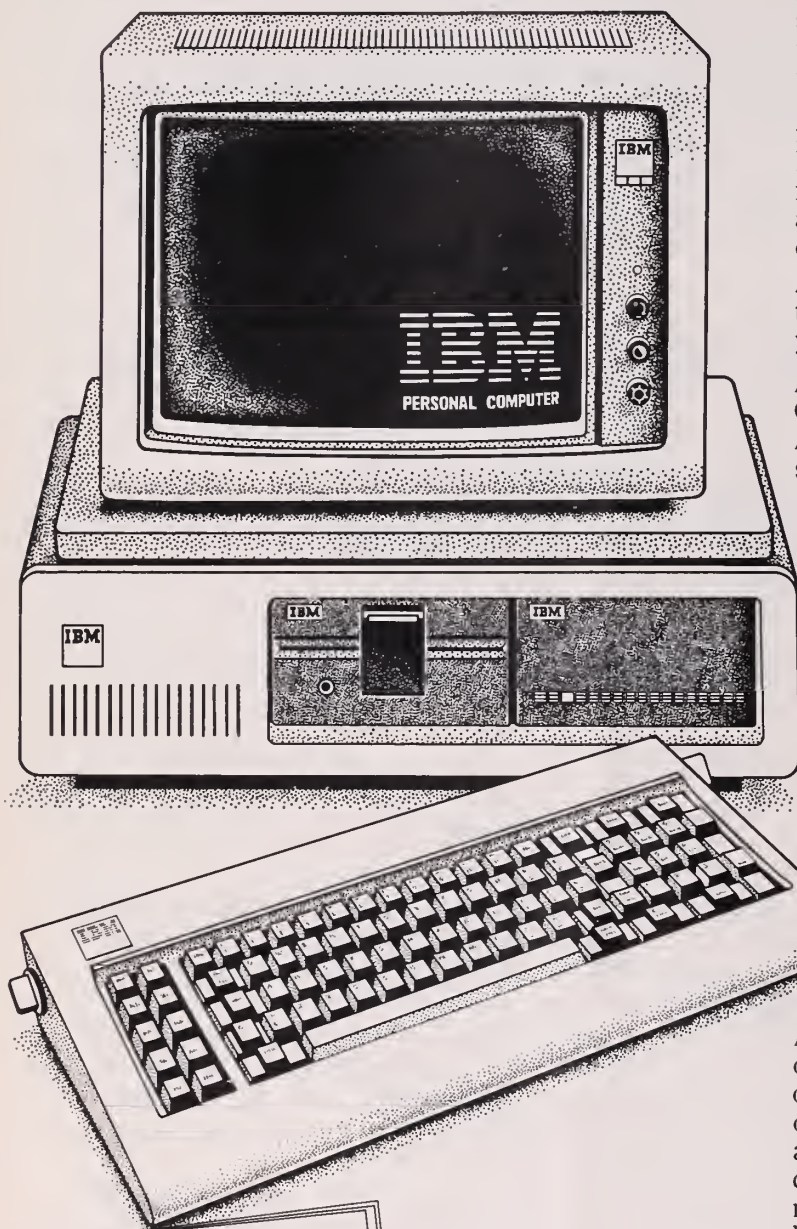
Eugene Gedgaudas, M.D., St. Paul, was recently elected president-elect of the American Roentgen Ray Society (ARRS) at its meeting in Las Vegas. Dr. Gedgaudas is professor and head of the Department of Radiology at the University of Minnesota.

J. Jeffrey McCullough, M.D., deputy executive director of the St. Paul Red Cross recently received the Charles Drew Award at the National American Red Cross Convention in San Antonio. McCullough was recognized for his leadership and for the development of programs such as the bone marrow donor recruitment effort. He is also a professor in the Department of Laboratory Medicine and Pathology at the University of Minnesota and director of the Blood Bank.

W. Mike See, M.D., a resident at the Mayo Clinic, was elected a delegate-at-large to AMA's Resident Physician Section during the June AMA Annual Meeting. Currently, See chairs MMA's Resident Physicians Section.

Wesley W. Spink, M.D., emeritus regents' professor of medicine and comparative medicine at the University of Minnesota, recently was presented the Bristol Award at a meeting of the Infectious Diseases Society of America. The award is for outstanding contributions to the understanding of infectious diseases. Dr. Spink's career began over 50 years ago at Harvard Medical School.

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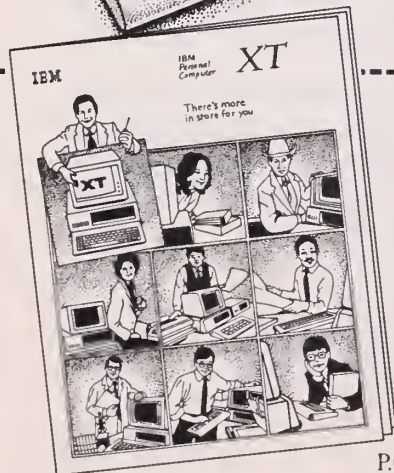
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Some Random Thoughts on Marketing and Other Things

RICHARD J. WEBBER, M.D.*

ABOUT SIX BILLION years ago, all of the mass from the entire galaxy was gathered and compressed to the size, let us say, of a suitcase. This closeness became unbearable, and resulted in a tremendous explosion from which there was a diaspora that is still going on. The galaxy with all its contents has been rapidly expanding for at least six billion years.

It is not certain, but it is thought that once the effects of the explosion have diminished, there will be a gathering again, and all matter will be attracted to a central point, and the circumstances repeated.

In the minds of many, the concept of the explosion is that this was the beginning of the galaxy. However, it takes only a small step to imagine that this might have been going on from a time more ancient than anyone had considered. This might be the first but it could also be the second, tenth, hundredth or five thousandth implosion-explosion. (As an aside, there is an old song about stardust in someone's eyes. In fact, all material is stardust, including eyes themselves.)

Since the explosion, all life has had to somehow find a niche in order to stay viable and productive. Of course, most types irrespective of whether it be flowers, fish, birds, or animals including humans, don't find their proper niche and are significantly changed or even phased out and miss the rest of the trip.

Some survive by finding a niche wherein they can combat their competitors and win out. Most of these; the fish, flowers, birds, animals, etc; that survive do so as a result of chance arrangement of their genetic elements. Those who are unable to adjust and find a proper niche do not make it. They will have to wait

for a second chance which is quite a long time.

Humans may be the possible exception to nature's laws of survival. The rigors of evolution have allowed the human intellect to develop to a point where man has a certain small effect on his destiny (for better or worse).

Medical practices, whether by individual physicians or by corporations, are living things subject to nature's laws of survival against the forces of competition. However, since humans are involved, it is possible to influence the course of events and locate a niche which will mean the difference between life and death. Those who recognize the threat are scrambling to reach a niche offering a degree of security and are positioning themselves to do battle with their competitors who, of course, are doing the same. The winner or winners will somehow have put together a superior strategic-tactical human resource package.

Looked on in this light, it is a sort of game. Those who have been able to adapt to their environment adequately, live on and prosper. Those who cannot, or will not adapt, wither and die. These facts of life are probably in the best interest of public policy. The losers must step aside and, if they wish, wait for the next ride which may be a long time away.

Since one usually does not get a second chance (or if so, it will be too long in coming) it is better to do things properly and correctly the first time and expend large amounts of effort and money on strategic tactical orientation. One must generally outthink, outspend and outwork one's competitors to accomplish anything in any form of our commercial life.

All those in favor of holding fast to the status quo and waiting for the next big bang, please stand and explain why.

*Retired Medical Director of SHARE.

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Part II†

RICHARD C. GEHRZ, M.D.*

UNTIL RELATIVELY RECENTLY, cytomegalovirus (CMV) was thought to be a rare cause of human disease¹. It was associated primarily with cytomegalic inclusion disease (CID), a severe congenital illness due to primary maternal infection with transplacental transmission to the fetus in the first trimester of pregnancy. These infants typically present with severe intrauterine growth retardation, microcephaly, intracranial calcifications, chorioretinitis, skeletal dysplasia, and severe psychomotor retardation. These chronic changes are indicative of a long standing infection with devastating injury to the fetus during the early stages of embryonic development. In many instances, these infants also manifest clinical evidence of ongoing active viral infection, with hepatosplenomegaly, thrombocytopenia, hyperbilirubinemia, and a characteristic purpuric rash. The mortality rate in these cases is approximately 20%, and most survivors have profound neurological handicaps.

Over the past 20 years, CMV has been implicated with increasing frequency as a cause of acquired illness in infants, children, and adults (Table). This virus has been shown to be a frequent cause of heterophile-negative mononucleosis either occurring *de novo* or as a result of blood transfusions. It has also been identified as a major cause of morbidity and mortality in immunosuppressed patients, particularly those undergoing organ or bone marrow transplantation.

Clinical Presentation

It is now appreciated that CMV produces a wide spectrum of infections in newborn children ranging from asymptomatic infection to the well-recognized,

devastating cytomegalic inclusion disease²⁻¹¹. The wide spectrum of clinical illness in infancy can be subdivided into prenatal, perinatal, and postnatally acquired infections.

Prenatal, or congenital, infections with CMV are those resulting from transplacental transmission of virus from the mother to her fetus^{12,13}. Maternal viremia may result from either primary infection, or reactivation of latent CMV. Clinical illness resulting from intrauterine CMV infection ranges from asymptomatic excretion in the newborn period to severe CID associated with CNS damage in virtually all cases. A significant number of infants, however, manifest acute systemic symptoms with no apparent irreversible damage in the newborn period, only to manifest late neurologic sequelae.

Perinatal infections reflect those in which the infant is colonized with CMV at the time of birth^{14,15}. Most

TABLE

Clinical Presentations of CMV in Humans

- I. CMV Infection in Infancy.
 - A. Pre-natal (congenital) infection
 - Cytomegalic inclusion disease (CNS damage)
 - Acute viremia with systemic symptoms (late neurologic sequelae)
 - Asymptomatic in newborn period
 - B. Peri-natal infection

Infant is asymptomatic at birth; may develop transient illness in first year of life. Incidence of long-term sequelae low.
 - C. Post-natal infection

Acquired CMV in infancy may present as hepatitis, encephalitis, thrombocytopenia, hemolytic anemia, pneumonia; illness is usually transient without sequelae.
- II. Acquired CMV Infection in Older Children and Adults.
 - A. Primary CMV infection
 - Asymptomatic excretion
 - CMV-mononucleosis
 - disseminated CMV infection associated with immune deficiency
 - B. Reinfection or reactivation of latent CMV
 - Asymptomatic reactivation during pregnancy with transplacental transmission or excretion in cervix/breast milk.
 - Reactivation in immunosuppressed patients
 - Association with carcinoma of the cervix and colon, Kaposi's sarcoma in homosexual males.

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†See Part I, July issue, page 379.

Supported in part by The Research and Education Fund, St. Paul Children's Hospital, and by Grants #AM18883, #HD12342, and #HD16173 from the United States Public Health Service.

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cases reflect passage through a contaminated birth canal, although ascending CMV infection of the placenta with transmission to the fetus or transplacental transmission secondary to maternal viremia at the time of birth may be the mechanism in a small number of cases. Infants are asymptomatic at birth but may develop transient illness in the first year of life. The incidence of long term sequelae associated with perinatal infection is unknown but is probably low.

Postnatally acquired CMV infection in the first year of life is not infrequent and may result from transmission from nursery personnel, frequent blood transfusions in the newborn period, breast milk, or oropharyngeal spread from older children or adults¹⁶⁻²⁰. Acquired CMV infection in infancy may be asymptomatic, or may present as hepatitis, encephalitis, acquired thrombocytopenia, hemolytic anemia, or diffuse interstitial pneumonia. These illnesses are usually transient without sequelae although more serious illnesses may result, particularly in infants with some underlying chronic disease.

Epidemiology

0.1% of infants in the United States have symptomatic CMV infection in the newborn period, and 90% of these will manifest significant neurologic sequelae. These infants typically excrete virus for months or years despite the presence of significant antibody titers to the virus. An additional 0.4-2.4% of infants asymptomatically excrete CMV in the newborn period^{2,5,6-9}. Long term follow up studies of these patients reveal that 10-15% manifest significant neurological sequelae, most commonly sensorineural hearing loss and/or diminished intelligence quotient^{6,7}. Therefore, 1 in 500 children have permanent neurological handicaps as a result of CMV infection, an incidence approximately the same as that of Down's syndrome. CMV accounts for 5,000 to 8,000 neurologically handicapped children each year in the United States alone.

Of equal importance, approximately 10% of children demonstrate serologic evidence of CMV infection in the first two years of life. Most are asymptomatic but are a potential source of transmission of virus, especially in day care centers, schools, or inpatient pediatric facilities, and present a potential public health problem to female employees during their child-bearing years²⁰. Recently, several studies have demonstrated that 14-31% of premature infants receiving frequent blood transfusions acquire CMV infection¹⁷⁻¹⁹. This is often manifested as a

self-limited, subclinical illness associated with splenomegaly and thrombocytopenia. However, some infants have developed evidence of acute interstitial pneumonia, which may be a particular problem in those with bronchopulmonary dysplasia or acute pulmonary disease.

Perinatal infection often results from colonization of the infant during vaginal delivery. It has been observed that 8-28% of mothers excrete cytomegalovirus in the cervix at some time during the pregnancy with the greatest incidence occurring during the third trimester. Approximately 1% of offsprings of mothers excreting CMV during pregnancy are found to excrete CMV in the newborn period. However, as many as 40% will excrete CMV if cultured repeatedly over several months. Recent studies have shown that 13% of mothers excrete CMV in breast milk and 58% of their infants will be infected with CMV¹⁶. It is clear that mothers present a significant reservoir for perinatal and postnatally acquired CMV infection as well as intrauterine infection.

Diagnosis

Diagnosis of CMV infection depends primarily on recognizing the many clinical syndromes that are associated with this virus. Laboratory confirmation is most successfully accomplished by viral isolation in human diploid fibroblast cell cultures. However direct identification of CMV in clinical specimens can be accomplished by a variety of techniques including electron microscopy and direct fluorescent antibody staining. Non-specific elevations of immunoglobulins and the presence of rheumatoid factor may be useful screening tests for identifying infants with potential congenital infection. However, specific serologic diagnosis depends upon identification of CMV-specific IgM antibody or demonstration of persistent CMV-specific IgG antibody in acute and convalescent serum specimens.

Treatment

Prevention of congenital CMV infection is not realistic at the present time, since the organism is ubiquitous and is most typically acquired from asymptomatic excretors. Although many hospitals recommend that women of child-bearing years who are pregnant or who expect to become pregnant should not work in areas where active CMV excretion is likely to occur, this is unlikely to significantly diminish the incidence of maternal acquisition of CMV infection. Since CMV has clearly been shown to be transmitted with blood transfusions, administration of blood

products from seronegative donors to high risk recipients such as premature infants may diminish the incidence of postnatally acquired CMV infection^{18,19}.

Horizontal transmission of CMV from asymptomatic, hospitalized children to nursing personnel and among normal children in day care centers has been clearly demonstrated^{23,24}. Infants with congenital CMV infection are therefore no more likely to spread CMV than asymptomatic excretors. Pregnant women should avoid intimate contact with infants known to be excreting CMV, and should also take reasonable precautions when handling urine or saliva from normal children who might be excreting the virus. CMV-infected infants pose no risk to other children in schools or day care centers. Spread of the virus is common and probably desirable to produce life long immunity.

Certainly, development of a safe, effective vaccine that will prevent primary CMV infection or establishment of latent CMV infection that can potentially be reactivated is mandatory if CMV is to be eradicated as a human pathogen. A live attenuated CMV vaccine is presently under investigation and shows promise for the future²¹.

At the present time, therapeutic measures to prevent ongoing viral replication and potential progressive injury to the central nervous system are under investigation. Antiviral chemotherapy has been of relatively little value in the treatment of cytomegalovirus infection although recent preliminary studies of Acyclovir in renal transplant patients indicate that viral excretion may be transiently diminished during administration of this drug.

Presently, the most effective approach to treatment of CMV infection has involved the use of immunostimulants that enhance the cell-mediated immune response to this virus. Both interferon and human transfer factor have shown promising results in preliminary studies²². It must be acknowledged that at

this time, supportive care for infants with congenital CMV infection remains the primary approach to management. A multidisciplinary clinic for care of the handicapped child with congenital CMV infection has been established at our institution with emphasis on early recognition of deficits and implementation of a variety of special training programs to help these children to achieve their maximum potential.

Because of the complex clinical problems associated with congenital cytomegalovirus infection, a multidisciplinary research clinic program has been established for these children at St. Paul Children's Hospital as a collaborative effort with investigators at the University of Minnesota and St. Paul Children's Hospital. This program has been developed as part of a collaborative clinical and research project of Drs. Richard C. Gehrz, Associate Professor of Pediatrics and Director of the Sutton Immunobiology/Virology Research Laboratory at St. Paul Children's Hospital and Henry H. Balfour, Jr., M.D., Professor of Pediatrics and Laboratory Medicine and Pathology and Director of the Virology Laboratory at the University of Minnesota. The program includes two major research studies, one involving a double-blind placebo controlled evaluation of transfer factor therapy as a means of immunologic enhancement in patients with defective cellular immunity to CMV and a second basic research project designed to investigate mechanisms of immunologic response in infants with active CMV infection. It is hoped that approximately 50 infants with evidence of congenital CMV infection or CMV infection acquired in early infancy can be included in the transfer factor study over the next three years. Physicians wishing to obtain further information regarding this program may contact Dr. Gehrz at St. Paul Children's Hospital (612) 298-8835.

Acknowledgment

The author would like to thank Ms. Patricia Kobett for preparation of the manuscript.

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- Will be found on page 443.

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Cold Agglutinin Disease

STEPHEN E. STEINBERG, M.D.* and JEANETTE MLADENOVIC, M.D.*

Cold agglutinins are IgM antibodies which have an affinity for antigens on the surface for red blood cells. Clinical manifestations result either from complement activation followed by lysis of the red blood cells, or from the agglutination and occlusion of microvasculature. The syndrome may occur spontaneously or secondary to any of a number of infectious and immune disorders. Pathophysiology, clinical and laboratory manifestations are discussed and therapeutical alternatives outlined.

COLD AGGLUTININ syndromes are characterized by red blood cell agglutination which results in occlusion of the microvasculature, and by hemolytic anemia. These syndromes occur in two clinical settings: (1) chronic cold agglutinin disease of the elderly (primary) and (2) cold agglutinin syndrome following any of a number of infectious or other disorders (secondary).

Pathophysiology

The clinical findings of cold agglutinin disease are IgM mediated, resulting in red blood cell agglutination with microvascular stasis and complement-mediated hemolysis. Cold agglutinins are IgM antibodies, which are able to bind to red cells at temperatures between 0-32°C, but which have little if any affinity for red cells at higher temperatures. These IgM antibodies most commonly react with the "I" antigen found on the surface of all red blood cells. Less frequently, the target is the "I" antigen, an allele of the "I" antigen (as blood group antigens A and O are alleles) found on the fetal cells but retained to some extent on young red blood cells in adults. Rarely the IgM antibody is directed against the PR antigen, which is equally expressed on adult and fetal red blood cells. All normal sera will have some anti-I antibody present in low titers which is reactive only between 0-4°C. Therefore the titer of cold reacting antibody at 4°C is not very informative. The thermal amplitude of the IgM antibody is the single most important consideration in assessing the possible clinical significance of a cold agglutinin, as it is the highest temperature at which the antibody is capable of binding to the target antigen. The thermal amplitude is critical because of the divergence between the optimal temperature for binding of cold agglutinins to red cells, and that for complement activation. Vir-

tually all cold agglutinins bind complement, but the agglutination is absent at 37°C and progressively increases at lower temperatures (maximal at 0-4°C); whereas the lytic activity of complement is greatest at 40°C and progressively decreases. Therefore, hemolysis usually occurs in the temperature range of 10-30°C where these two activities overlap, with maximum hemolytic activity at 22°C. For this reason, a cold agglutinin which does not agglutinate red blood cells at 20°C in saline is very unlikely to be responsible for clinically significant hemolysis, or microvascular stasis.

Clinical Manifestations — General

The small vessel occlusion in cold agglutinin syndromes may involve any part of the body, but is most prominent in fingers and toes, the tip of the nose and ear lobes, since antibody binding and subsequent agglutination are enhanced by the lower temperatures encountered in these locations. It is characterized by a striking discoloration of the skin which may vary from pale white to deep blue-violet (acrocyanosis), and may be accompanied by numbness or occasionally pain. In contrast to Raynaud's phenomenon, there is no blanching phase and little evidence of hyperemia. Although, acute vascular disturbances are reversible, signs of chronic tissue damage and even gangrene may supervene.

The hemolytic anemia which accompanies cold agglutinin syndrome is rarely severe. Red blood cell production increases to compensate for the increased destruction, so the resulting anemia is moderate. Acute exacerbations may occur on exposure to cold stress, resulting in a sudden bout of hemolysis and consequent hemoglobinemia and hemoglobinuria. Acute episodes of cold-induced intravascular hemolysis may also be accompanied by fever, chills and occasionally, renal failure. In those unusual instances where the antibody has a very high thermal amplitude

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(i.e. agglutinating activity near 30°C) hemolysis may be severe even when the patient is carefully protected from the cold.

Physical findings in cold agglutinin syndromes include those of acrocyanosis, anemia, and jaundice secondary to hemolysis. The patient is otherwise healthy; the spleen tip may be palpable, and the liver slightly enlarged. Patients with cold agglutinin disease secondary to other disorders may have the signs and symptoms related to those illnesses.

Laboratory Diagnosis — General

The presence of cold agglutinins is often suspected from the examination of an anticoagulated sample of blood at room temperature. The sample may appear to be coagulated or show marked clumping, which disappears when the blood is rewarmed to 37°C. This is the essence of the test for cold agglutinins. In the laboratory, the serum is diluted so that titers may be established and the thermal amplitude of the IgM antibody determined. When significant hemolysis is present, the thermal amplitude will be above 20°C, and the cold agglutinin titer (assessed at 4°C) will usually be greater than 1:1,000. The direct antiglobulin test (DAT, direct Coombs' test), is positive and characteristic: the cells have two complement components, C_{3B} and C_{3D} on their surface, without any immunoglobulin. The DAT is negative for immunoglobulin because the IgM readily elutes from the cells, especially on warming, and also because most antiglobulin test sera do not contain much anti-IgM activity. This is in contrast to warm mediated (i.e. IgG) hemolytic anemias, where the DAT is positive for IgG with or without C_{3B} and C_{3D} on the red blood cells. Further, complement levels may be decreased while active hemolysis is in progress.

The hemoglobin and hematocrit values reflect the degree of hemolysis and may show considerable vari-

ation in relation to seasonal and other factors. The finding of a low or occasionally even a normal hematocrit associated with an elevated reticulocyte count (corrected reticulocyte count greater than 3%) in the absence of any evidence of blood loss suggests hemolysis. Agglutination may make red blood cell counts and blood smear preparations difficult, unless they are carried out on fresh, warm specimens and the equipment prewarmed. Spherocytosis is usually not striking and the hemolysis is generally not brisk enough to cause the appearance of nucleated blood cells in the peripheral blood. Serum bilirubin is rarely more than 3 mg/dl and is predominantly indirect reacting. There may be other signs of mild intravascular hemolysis, such as a hemoglobinemia, low or absent haptoglobin, chronic low grade hemoglobinuria, and hemosiderinuria. All these findings are more conspicuous in colder weather.

Clinical Syndromes

As noted previously, there are two types of cold agglutinin syndromes: a primary disease of the elderly, and a secondary type associated with various infections. The manifestations of these two syndromes are summarized in the table.

Primary Cold Agglutinin Disease

Primary cold agglutinin disease, otherwise known as cold agglutinin syndrome of the elderly, has a peak incidence in the 50-60 year old age group, although about 20% of patients may be under age 40. Both sexes are equally affected. This disease is characterized by the gradual onset of symptoms, and a very chronic course. The antibody is a monoclonal IgM, kappa light chain, with specificity for the I antigen. The prognosis of patients with primary cold agglutinin syndrome is generally good, with most patients surviving years and tolerating the mild to moderate anemia. Severely affected individuals may

Cold Agglutinin Syndromes

	Primary	Secondary
Age:	usually elderly	20-40 yrs
Course:	chronic	acute
Antibody response:	monoclonal IgM	polyclonal IgM
Light chain	kappa	lambda or kappa
Specificity	I	I or i
Associated diseases:	CII Myeloma Lymphoma Kaposi Sarcoma	Viral Infections — <i>Mycoplasma Pneumoniae</i> <i>Infectious Mononucleosis</i> <i>Cytomegalovirus</i> Mumps Bacterial Infections — <i>Endocarditis</i> <i>Listeriosis</i> <i>Syphilis</i> Parasitic Infections — <i>Malaria</i> <i>Trypanosomiasis</i> Autoimmune diseases Angioimmunoblastic lymphadenopathy

succumb to the complications of a slowly progressive anemia, or to repeated blood transfusions. Therapy usually has little effect on the outcome. Primary monoclonal IgM cold agglutinin disease is also associated, although infrequently, with lymphoproliferative disorders such as chronic lymphocytic leukemia, myeloma, Kaposi's sarcoma, and various lymphomas.

Therapy consists mainly of avoidance of cold exposure during the winter months, since the anemia is otherwise generally modest. Warm clothing and protection of the extremities is essential, and occasionally the patient may be forced to move to a warmer climate. Other than avoidance of cold exposure, therapeutic alternatives to ameliorate the hemolysis are limited. Splenectomy and steroids are usually not effective in the therapy of cold agglutinin disease, despite occasional reports of success. Although suppression of antibody production by chemotherapeutic agents such as cyclophosphamide or chlorambucil is logical and accepted therapy, dramatic responses are not usual. Plasmaphoresis may be of benefit in the acutely ill patient, since IgM antibodies are predominantly distributed within the intravascular space. Care must be taken to perform this procedure at 37°C.

Blood transfusions should be avoided if possible, as they may be associated with increased hemolysis. This occurs because the patient's own red cells are protected by inactive complement moieties on the membrane. The transfused cells may be hemolyzed because they have available sites for antibody binding and complement fixation. If transfusion is essential, (usually for cardiovascular compromise) cross-matching must be done at 37°C to avoid masking of potentially reactive alloantibodies, and the transfused blood should be warmed to 37° by an efficient inline blood warmer. Uncontrolled heating of blood is extremely dangerous and should not be attempted.

Secondary Cold Agglutinin Syndromes

Most commonly, secondary cold agglutinin syn-

drome occurs following infection with *Mycoplasma Pneumoniae*, in which case the antibody is IgM kappa with specificity directed toward the I antigen on the red cells; or infectious mononucleosis, where the antibody is IgM lambda light chain, directed against the i antigen on the red cells. The antibodies in these instances represent a polyclonal response to some stimulus, rather than a monoclonal proliferation of lymphoid cells, as is seen in the chronic primary type. Although most patients with either mycoplasma or infectious mononucleosis have a rise in the titer of cold agglutinins in their serum peaking 2 to 3 weeks after the onset of illness, clinically manifest hemolytic anemia is rare, occurring only when the thermal amplitude and the titers are very high. The prognosis is excellent, since the hemolysis is self limited and usually mild. Even severely affected individuals do well, because they are usually in the 20-40 year old age group and are unlikely to have associated cardiovascular disease. Polyclonal cold agglutinin syndrome may occasionally be seen in other viral, bacterial, parasitic, and autoimmune diseases, as well as with angioimmunoblastic lymphadenopathy. Management clearly depends on control of the underlying disease. If the hemolytic anemia is severe, protection from cold stress is essential. Steroids are particularly efficacious when infectious mononucleosis is the associated infection, but not when the hemolysis is related to mycoplasma infection.

In summary, primary and secondary cold agglutinin syndromes result from the presence of an IgM antibody which has the ability to agglutinate red blood cells at lower than normal temperatures, resulting in a complement mediated hemolytic anemia and microvascular occlusion. Management of these patients by the avoidance of cold exposure is usually all that is required. However, in patients with severe disease the success of intervention depends upon understanding the pathophysiology, and controlling the underlying disease.

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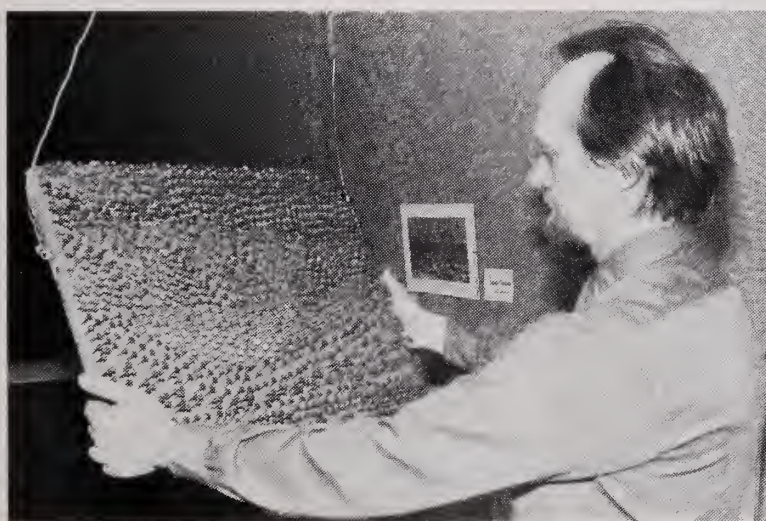
Minnesota Medical Association

1984 Physician as Artist Show



Willem Dieperink, M.D., psychiatrist, St. Paul. Dr. Dieperink was the recipient of the First Prize award at the 1984 Physician as Artist Show for his oil painting "Ambivalence". This was one of 20 art exhibits which included sculptures, drawings, color/black and white photography and ceramics. Photo by Roger Johnson.

Mr. Jerry Rudquist scrutinizing "Canada Goose in Cornfield". This life-size solid walnut goose, valued at \$3,000, was entered by Robert D. Thielen, M.D., family practitioner, New Brighton, Minnesota. Photo by Roger Johnson.



Mr. Jerry Rudquist, Professor of Art, Macalaster College, St. Paul, Minnesota. Mr. Rudquist served as the judge for the 1984 Physician as Artist Show. He appears reviewing the untitled nail sculpture entered by Richard P. Virnig, M.D., family practitioner, Wells, Minnesota. This 11 pound exhibit was made of copper roofing nails on a double plywood base. It was displayed suspended from the ceiling to allow viewing of the abstract painting on the reverse. Photo by Roger Johnson.

If you are interested in the Fourth Annual Physician As Artist Show (May 8-10, 1985)
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An added complication... in the treatment of bacterial bronchitis*

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of ampicillin resistance in
Haemophilus influenzae

Ampicillin Resistant
Haemophilus influenzae

H. influenzae

S. pneumoniae

Brief Summary. Consult the package literature for prescribing information.

Indications and Usage: Cefaclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci).

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Cefaclor.

Contraindication: Cefaclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics including Cefaclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins), therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions: General Precautions—If an allergic reaction to Cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Cefaclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematology studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Cefaclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Cefaclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinistest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in terrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cefaclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Cefaclor have been detected in mother's milk following administration of single 500-mg doses.

Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one

hour. The effect on nursing infants is not known. Caution should be exercised when Cefaclor® (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions: Adverse effects considered related to therapy with Cefaclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis, arthralgia and, frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cefaclor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transient abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematologic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

(061782R)

Some ampicillin-resistant strains of *Haemophilus influenzae*—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Cefaclor.¹⁻⁶

In clinical trials, patients with bacterial bronchitis due to susceptible strains of *Streptococcus pneumoniae*, *H. influenzae*, *S. pyogenes* (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Cefaclor.⁷

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*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.⁸

Note: Cefaclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Sexual Assault: The Problem and Its Management

ANDREA L. TIPPLE, M.D.* and T.M. JULIAN, M.D.*

The problem of sexual assault and its management involves physicians and patients in an extremely difficult situation. A patient who has just undergone the most traumatic experience of a lifetime must be treated appropriately and promptly. To help physicians better understand the problem, the victim, assailant, patient care, specimen handling and legal aspects are discussed.

SEXUAL ASSAULT is a widespread problem, the magnitude of which can only be estimated. Women and children continue to be the primary victims and men the primary assailants. According to the 1982 United States Uniform Crime Report, a reported forcible rape occurs every seven minutes. In the United States in 1982 over 77,000 rapes were reported, 34 per 100,000 population. Minnesota's annual sexual assault rate is 23 per 100,000. The reported rates for Minneapolis and St. Paul exceed 80 per 100,000, comparable to other metropolitan areas. Nationwide rates have increased five fold between 1965 and 1980.^{1,2}

Variations in police and public attitudes, local legal codes, crime enforcement activity, and record keeping contribute to the incompleteness of sexual assault statistics. Under reporting may be the major barrier to complete assessment of sexual assault. The Law Enforcement Assistance Administration estimates 50% of forcible rapes are never reported.

The likelihood to report is influenced by multiple factors. Reporting is increased when large age disparity exists between victim and offender, the victim is injured, witnesses are present, the offense is interracial, or the offender is unknown to the victim. Acquaintances as assailants, incest, homosexual assaults, and male victimization are less likely to be reported. Binder in a 1981 survey stated the following reasons victims do not report: guilt, embarrassment, fear of police involvement, fear of retaliation, and the expectation reporting will be futile.³

Victim Characteristics

Victims' ages range from infancy through the ninth decade. Fifteen through nineteen represents the age group most frequently victimized. Greater than fifty percent of victims are women less than twenty five. Victims of both sexes, all ages, all races, and from all

socioeconomic backgrounds are represented.

Assailant's Characteristics

Studies confirm sixty percent of rapists are under twenty five at the time of the assault.^{4,5,6,7} The race of the rapist reflects the nature of the population studied. More than ninety percent of victims and assailants are the same race. Four percent of rapes involve white men and black women, and an additional three percent involve black men and white women.

Many theories to explain the motivation of rapists exist. The only features common to rapists are violence and sexual behavior. More than fifty theories exist to explain the motivation for rape. Cohen classified rapists into four groups on the basis of behavior: (1) displaced-aggression, (2) compensatory, (3) sex-aggression-defusion, and (4) impulsive.⁶

The displaced-aggression rapist acts with an aggressive motive. Sexual behavior is used as a weapon to physically overpower, harm, degrade, and abuse the victim. The victim is often unknown and is not the object of offender's anger but is the object of displaced aggression.

Compensatory rapists have passive and submissive personalities and consider themselves sexually inadequate. The assault is an effort to compensate for inadequacy. Aggression serves in attainment of sexual gratification.

The sex-aggression-defusion rapist performs brutal assaults and rape-murders. Sexual and aggressive desires coexist. The rapist is unable to experience sexual desire without concomitant aggressive thoughts, feelings, and behaviors.

The impulsive rapist acts in the context of other antisocial behavior such as robbery or theft. Neither sexual nor aggressive desires play a significant role. The victim is unfortunately present and falls prey to the rapist's impulsive, opportunistic behavior. According to Amir's 1971 study of 1,300 offenders, sixty percent were married, leading normal sexual

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lives. Rapists differ from the normal well-adjusted male by showing greater tendencies toward expressions of violence and rage. Sexual behavior becomes a tool for expressing violence and rage.⁴

Offense Characteristics

Victims and assailants are known to each other in 40-50% of cases. Eighty two percent live within five city blocks. Sixty eight percent of offenses occur within that neighborhood. One half occur in the victim's or assailant's home. One third occur out of doors or in automobiles.^{4,5} Michael in 1983 reviewed 50,000 rapes in different U.S. locations, noting statistically significant annual rhythms with maximum occurrence in summer. Highest risk days during the week are Fridays and Saturdays with peak risk hours between 8 pm and 2 am.^{4,5,8}

Multiple assailants are involved in 20-40% of assaults and 90% of these are premeditated. Seventy percent of single assailant assaults are premeditated. Fifty percent of sexual assaults involve physical force or verbal threats. In 40% a gun, knife or blunt object is used. One in 300 sexual assaults is fatal, with one quarter of these victims between 70 and 84 years old.

Minnesota Criminal Sexual Conduct Law

In 1975 the Minnesota legislature dramatically revised the sexual crime statutes. Under the new law criminal sexual conduct includes rape, homosexual assault, sexual abuse of children, and any sexual activity without consent. The victim's sexual history is no longer admissible in court. The law provides for the expense of medical care for evidence gathering even without prosecution. Resistance by the victim and corroboration of the victim's testimony are no longer required for prosecution.⁹

Four degrees of criminal sexual conduct are described. First and third degree offenses require penetration, defined as any intrusion into the genital or anal openings of the victim's body by any object or part of the offender's body. Second and fourth degree offenses require sexual acts committed without the victim's consent including intentional touching by the offender of the victim's intimate parts, forcing the victim to touch another's intimate parts, or touching clothing covering intimate parts. Intimate parts include genitalia, breasts, inner aspects of the thighs, or buttocks. Higher degrees of force are required in first and second degree offenses.⁹

In 1980 the law was revised to afford protection to victims regardless of marital status, stating that anyone in an ongoing voluntary relationship can no longer use the relationship as a defense.

Evaluation and Treatment of Victims

Most victims of sexual assault present for evaluation to emergency medicine departments. Goals in evaluation and treatment include: (1) Treatment of injuries and care of immediate emotional needs, (2) Diagnosis and treatment of sexually transmitted diseases, (3) Diagnosis and prevention of pregnancy, (4) Collection of evidence for use in legal proceedings, (5) Documentation of findings and care.

The victim of sexual assault has endured a traumatic and life threatening experience with feelings of humiliation, degradation, distrust, fear, and anger. The victim's most immediate need is to feel safe. Evaluation and treatment should be initiated immediately. Evidence must be gathered and processed as soon as possible to allow for optimum interpretation.

The decision to report the crime remains with the victim. Minnesota statutes require the cost of examination for gathering evidence must be paid by the county. Prosecution is not required for payment.

The Minnesota Program for Victims of Sexual Assault recommends a team approach in caring for the medical and emotional needs of sexual assault victims. The team consists of a victim support person, an emergency room nurse, and a physician. The role of each is well defined prior to caring for the victim. Guidelines have been established and are published in *Sexual Assault: A Statewide Procedure Manual*.⁷

Role of the Examiner

The role of the physician is to provide for the emotional and physical needs of the victim, collect specimens for evidence, and establish a permanent record of examination findings. The physician should introduce himself and reassure the victim she is safe. Because the victim has been through an experience involving loss of control, the victim should be involved in decision making regarding examination and treatment. This may aid in regaining a sense of control. Allow the victim to determine the rate of questioning and obtain permission from the victim for each step in examination. Inform the victim of her physical condition in a supportive way. Briefly discuss the psychological sequelae of rape and provide contact with persons trained in rape crisis intervention. Involve the victim in decisions about contacting and providing information to police, family, and friends.

History

The sexual assault history should be collected by the emergency room nurse or physician. It is not a

detailed account of the assault but a collection of information important in caring for the victim. The history should include past sexual, menstrual, and contraceptive history, and details of the assault concerned with the victim's physical and psychological needs.

Examination

The sexual assault examination focuses on identifying genital and extra-genital trauma and collecting evidence. General physical appearance and emotional state should be noted. Extragenital areas to carefully examine include the mouth, face, neck, and breasts. Document bruises, lacerations, pressure imprints, point tenderness, bite marks, and rope marks. Vulvar injuries, perineal trauma, vaginal lacerations, blood present, discharge, and foreign bodies should be documented. Bimanual examination should be performed to assess uterine size, adnexal masses, and tenderness.

Minor injuries are reported in 45-75% of cases, major injuries requiring hospitalization in 4-15%. Genital injuries are reported in less than one fourth of assaults, most commonly in children, adolescents, and nulliparous women.

The presence or absence of semen or sperm does not correlate well with genital trauma. Groth and Burgess postulate this may be because over one third of convicted rapists have a history of sexual dysfunction during assaults.⁹

Lauber, et al. examined women after consenting intercourse and victims of sexual assault to evaluate genital trauma using toluidine blue stain to identify superficial lacerations and abrasions. Forty percent of assault victims and less than 10% of women after voluntary intercourse had staining lacerations. Prior to the use of toluidine blue the authors noted genital trauma in less than 25% of assault cases. Colposcopic examination of the introitus has also been suggested to help visualize traumatic lesions.¹¹

Collection of Evidence

The final purpose of the examination is to collect evidence. Evidence in sexual assaults includes physical trauma, blood, semen, hairs and fibers. The hospital laboratory or the forensic laboratory of the Bureau of Criminal Apprehension will analyze the specimens. Evaluations are comparative requiring control samples from the victim and suspect.

Blood is obtained from the victim for typing and serology for syphilis. Assaultants' blood group antigens will be compared with those found in blood stains from the victim's clothing and at the site of

assault. Saliva is obtained from the victim and assailant for determination of secrete status. Eighty percent of persons secrete blood group antigens into saliva, perspiration, semen, and vaginal fluid. Typing can be used to corroborate or exclude suspects.⁷

Vaginal swabs are obtained from the posterior fornix of the vagina for three purposes: identification of sperm on permanent slides, sperm motility, and identification of prostatic acid phosphatase. Sperm remain motile in the vaginal vault for six to eight hours. This is the most precise determination in timing the sexual assault. False positives may be obtained if the specimen is sampled from the endocervical mucous where sperm may remain motile for days. Acid phosphatase from seminal fluid is present up to thirty hours after intercourse and may be helpful in cases involving oligospermic assailants.

Collect specimens from all sites of genital and extragenital assault. In cases of oral assault the gums are a reliable site for sperm retrieval. Vaginal penetration is the most frequent type of sexual assault, reported in 90% of cases. Sperm was identified in 75% of victims in Solola's study. Sperm motility was identified in 9%.⁵

Other tests include a cervical gonorrhea culture, urine pregnancy test, urine and serum toxicology studies, and blood alcohol levels. Nail scrapings can be sent for tissue typing and blood group antigens. The victim's clothing should be carefully labeled and presented to the police as evidence.

Venereal Disease

Approximately 5% of victims will contract gonorrhea. Most authors recommend waiting until cultures or serology returns positive prior to treatment. The victim should be recultured for gonorrhea 3-5 days after the assault and undergo repeat serology for syphilis in six weeks.

Pregnancy

Three to five percent of untreated victims of sexual assault become pregnant as a result of the assault. Options in excluding pregnancy are observation, postcoital estrogens, oral contraceptives, menstrual extraction, or placement of an intrauterine device. The intrauterine device holds risks in at least four situations: fertility preservation in nulliparous women, women with multiple sexual partners, victims with gonorrhea, and in women with a history of pelvic infection. Postcoital estrogens or contraceptives should not be used until pregnancy has been ruled out.

Handling of Evidence

Evidence must pass directly from examiners to persons processing the specimens. Signatures must be obtained from each person handling the specimen. If the chain of evidence is broken, the specimens will not be admissible as evidence.

Documentation

Brief, factual, objective statements should be recorded. Photographs and drawings are useful in describing trauma. Avoid judgmental and qualifying language such as, "The victim appears unusually calm", or "The alleged rape victim . . ." The medical record is used in considering prosecution. Judgmental statements may cast doubt as to the validity of the victim's testimony.

Psychological Responses of Victims of Sexual Assault

Burgess and Holmstrom described a Rape Trauma Syndrome based on a study of 92 female victims presenting to the emergency room of Boston City Hospital.¹³ The authors described a two phased response. First is acute impact and disorganization which may be either repressed or expressed. In the expressed form anger and anxiety are clearly visible. In the repressed form these expressions are absent. In addition to many somatic difficulties, the authors noted a wide variety of emotional reactions including fear, humiliation, anger, embarrassment, self-blame and a desire for revenge. The primary feeling was fear of physical violence and death. The phase of acute disorganization lasted weeks to months followed by a long term reorganization process in which the victim experienced mild to moderate fear responses: changing residence, changing telephone numbers, phobias and nightmares.

The silent rape reaction is experienced by victims

who have been raped and told no one. They alone bear the burden of the assault, experiencing anxiety, irritability, avoidance of relationships, changes in sexual behavior, onset of phobic reactions, loss of self-confidence, decreased self-esteem, and self-blame.

Sutherland and Scheri described a pattern of response among rape victims which includes impact, outward adjustment, integration and resolution. Disorganization characterized the acute phase, and emotional responses were varied. In outward adjustment the victim will deny, suppress, and rationalize the assault in an attempt to return to normalcy. This phase may last days to years despite an outward appearance of adjustment. During integration and resolution the victim becomes depressed and needs to talk about the experience. Resolution occurs when the victim is able to experience anger and focus the anger on the rapist. Resolution is complete when the victim is able to resume normal functioning without being repressed by or dominated by the experience.¹⁴

Frank, et al., noted depression in over 50% of victims.¹⁵ Many victims noted a change in sexual experiences following assault. Victims experienced sexually related problems with flashbacks, dyspareunia, decreased sexual response, and overall diminished sexual activity. In a long term study by Burgess and Holmstrom, 25% of victims did not recover from the assault in regard to sexual response.¹⁶

Conclusion

Sexual assault is a widespread crime of violence affecting significant numbers of men, women and children. Victims' lives are profoundly affected for many years following assault. As health care providers we can positively affect the recovery of victims by sensitively caring for their psychological and physical needs, and through accurate collection of evidence.

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CARDIZEM®
(diltiazem HCl)

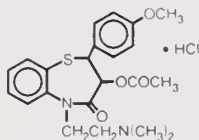
**THE BALANCED
CALCIUM CHANNEL BLOCKER**

PROFESSIONAL USE INFORMATION



DESCRIPTION

CARDIZEM[®] (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)-one, 3-acyloxy-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride, (+) - cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antilanginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. **Angina Due to Coronary Artery Spasm:** CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect, cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.1%), asthenia (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of presentation corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and anxiety.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vomiting, mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episodic vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single 60 mg dose of CARDIZEM.

The following postmarketing events have been reported frequently in patients receiving CARDIZEM: erythema multiforme, kopeia, and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed, addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.60 to 1.0 mg). If there is no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed high-degree AV block should be treated with diac pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levorotary bitartrate).

Actual treatment and dosage should depend on the severity of the clinical situation and the judgment and experience of the treating physician.

The oral LD₅₀'s in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD₅₀'s in these species were 60 and 38 mg/kg, respectively. The oral LD₅₀'s in dogs is considered to be in excess of 50 mg/kg, while lethality seen in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals and at bedtime, dosage should be increased gradually (given in divided doses three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients may respond to any dosage level, the average optimum dosage range appears to be 180 to 240 mg/day. There are no available data concerning dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

Concomitant Use With Other Antilanginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be synergistically coadministered with short- and long-acting nitrates, but there have been no controlled studies to evaluate the antilanginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (NDC 0088-1771-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1771-49). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1772-49). Each white tablet is engraved with MARION on one side and 1772 on the other. Issued 4/84

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Management of Breech Presentation at Term

A Retrospective Five Year Review to Test Guidelines of a Management Protocol

PETER E. FEHR, M.D.*

A retrospective analysis of 332 singleton breech presentations 34 weeks or greater gestational age showed a corrected neonatal mortality in vaginal deliveries of 5/1000 (one case) with a morbidity of 33/1000 compared to a similar vertex mortality of .3/1000 and morbidity of 16/1000 during the same period 1974-78. The management was reviewed, and a comparison made with the recommendations of Rovinsky, et al. and Quilligan, et al. The review suggests that these recommendations would be useful in a community hospital and provide a reasonable cesarean section rate.

DURING THE PAST ten years a striking change of attitude has taken place in the obstetrical literature and community hospital practices regarding the management of the breech presentation. The encouragement towards the liberalization of the indications for cesarean section^{1,2} in breech presentations has led to a situation in some areas where all breech presentations are delivered by cesarean section unless the delivery accidentally occurs before the surgery can be started.

The pendulum of attitude has swung from the 1950s when it was assumed that anyone with minimum obstetrical training could do a vaginal breech delivery, to the place where most are delivered by obstetricians and a high percentage by cesarean section.

In 1974 the North Memorial Hospital Obstetrical Committee developed a policy requiring obstetrical consultation on all primigravida breech presentations. In 1976 a sudden shift in practice patterns occurred which made cesarean section a much more common method of delivery of the breech presentation.

Finally, in our monthly review of primary cesarean sections we have noted a significant maternal morbidity in cesarean deliveries regardless of indication but especially when premature rupture of membranes is present. This combination of trends in practice and maternal morbidity has prompted the study of the entire question of what is appropriate management of the breech presentation.

Rovinsky, Miller and Kaplan³ in 1972 suggested as a conclusion to their detailed study of breech presentation that: (1) indications for cesarean section should be liberalized, (2) vaginal delivery be considered if

maternal pelvic measurements are known and of normal mean dimensions and the estimated fetal weight is not excessive, (3) breech labor and delivery should be supervised by the most experienced obstetrician available and affected with the least obstetric manipulation possible, and (4) that constant fetal monitoring be carried out.

Quilligan and colleagues⁴ proposed a definite set of criteria which if applied would provide for relative safety in breech management. They stress the need for minimum adequate x-ray pelvic measurements — Inlet: A-P 10.5 cm., Transverse 11.5 cm.; Midpelvis: A-P 11.5 cm., Transverse 10.0 cm. for a vaginal breech delivery. They further recommended that hyperextension of the fetal head, excessive fetal size, and presentations other than frank breech presentation also be managed by cesarean section.

A retrospective review of the entire problem of management of the breech presentation was begun in an attempt to determine if the recommendations of Rovinsky, et al.³ coupled with the guidelines of Quilligan's group⁴ could be applied to achieve a good outcome with a reasonable cesarean section rate.

Study Population

In the five year period 1974-78, 10,328 singleton deliveries occurred in our community hospital (North Memorial) which is a perinatal intensive care center.

During this study period there were 380 singleton breech presentations with an overall incidence of 3.68 percent. If the stillborn infants (16) and those with congenital anomalies incompatible with life (5) (i.e. anencephalic etc.) are deleted, there remain 359 singleton breech presentations. In the vertex presentations there were 38 stillborn and 13 with congenital anomalies incompatible with life for a corrected total delivery population of 10,256. The corrected overall

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incidence of viable breech presentations was, therefore, 3.5 percent.

As noted in other reported similar series, the percentage of breech presentations in the study population was related to the fetal weight varying from 32 percent in the 500-1000 gram size to 2 percent in those 4000-4500 grams. Figure 1 demonstrates the overall weight distribution of births during this period of time. The percentage of breech presentations as a function of weight in singleton live born pregnancies is presented in Figure 2.

Breech-Perinatal Deaths

Table 1 contains the causes of the perinatal deaths in the singleton breech presentations of 34 weeks and greater gestational age (332) during this study period. Three of the five antepartum deaths may have been preventable with better prenatal care although only

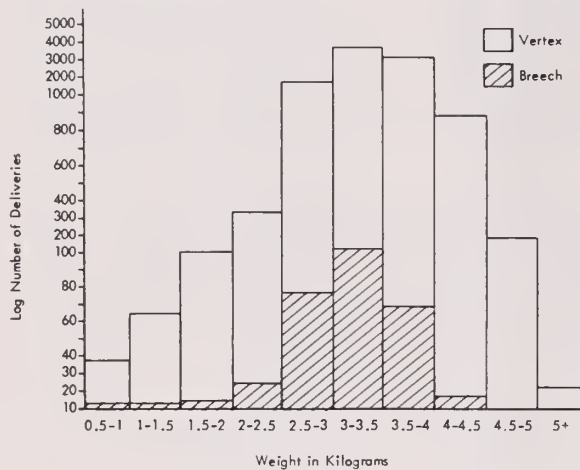


Fig. 1 — Comparison of number of liveborn breech presentations to total singleton deliveries 1974-78 by weight.

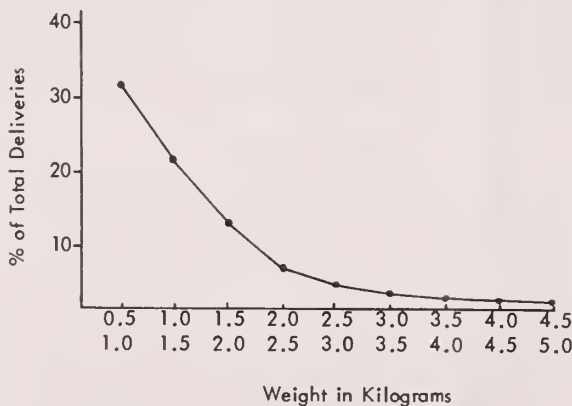


Fig. 2 — Breech presentations as a percentage of total singleton deliveries by weight.

one of the six neonatal deaths in this age group were considered preventable. This neonatal death occurred as a result of the delivery of a term multiparous patient who did not have x-ray pelvimetry and who was not electronically monitored in labor. The second stage was uncomplicated and the cause of the meconium aspiration was not determined. This gives a corrected overall neonatal mortality rate for singleton breech presentations of 34 weeks of gestation and greater of 3 per 1000 live births.

During the previous five year period, 1969-73, our neonatal death rate for this same group of presentations was 12 per 1000. The deaths were all due to traumatic delivery of the aftercoming head.

Table 2 details the apparent morbidity associated with mature vaginal breech delivery which when corrected for lethal fetal anomalies as a cause of low Apgar scores gives a neonatal morbidity rate of 33 per 1000 and a mortality rate of 5 per 1000. In the prior five year period the neonatal morbidity rate was 70 per 1000 with difficulty managing the shoulders and aftercoming head accounting for 60 percent of the injuries and low Apgar scores.

TABLE 1

Causes of Perinatal Deaths associated with Breech Presentation 34 Weeks Gestation or Greater. N = 332

Antepartum deaths		
Anencephalic	? cause	1
Diabetes — severe preeclampsia		1
Diabetes		1
Coumadin therapy in pregnancy		1
Hydrocephalic	? cause	1
		5
Neonatal deaths		
Meconium aspiration		1
Multiple congenital anomalies — lethal		2
Potter's syndrome		2
Anencephalic		1
		6

TABLE 2

Neonatal morbidity — Breech presentation 34 Weeks Gestation or Greater. Vaginal Delivery. N = 182

Five minute Apgar <7		9
Associated conditions:		
Meconium aspiration — expired		1
Multiple congenital anomalies — survived		1
*Potter's syndrome — expired		2
*Anencephalic — expired		1
Unknown etiology		2
*Multiple congenital anomalies — lethal		2
Fracture humerus		1
Brachial plexus injury		1
Total neonatal morbidity		11
Minus lethal fetal anomalies*		5
Corrected morbidity		6

Table 3 details the neonatal morbidity and mortality observed in the vertex presentations delivered during the study period. As can be seen, there were two neonatal deaths for a rate of .3 per 1000. The overall neonatal morbidity for vertex presentations was 15 per 1000. It should be noted that there were 15 vaginal vertex deliveries with Apgar scores 1-3 while no vaginal breech deliveries were so severely depressed in this period of time.

TABLE 3

Perinatal Morbidity and Mortality — Vertex Presentation 34 Weeks Gestation or Greater. Vaginal Delivery. Corrected for Lethal Anomalies. N = 9797

Five minute Apgar <7	93
Associated conditions:	
Meconium aspiration	7
Seizure disorders	5
Brachial plexus injuries	2
Clavicle fractures	2
Multiple congenital anomalies — survived	1
Fracture clavicle	23
Seizure disorder	6
Meconium aspiration	5
Cerebral dysfunction	3
Brachial plexus injury	2
Skull fracture	1
Brain stem injury	1
R D S Elective repeat C-section	1
Small for gestational age — expired	1
Intrauterine asphyxia — expired	1
Total perinatal morbidity and mortality	137

Table 4 lists fetal injuries found in association with cesarean section deliveries. Though the number is small, 7 per 1000, the fact must be noted that even cesarean section is not without some risk to the fetus.

Maternal Morbidity-Cesarean Sections

A study of major maternal morbidity of those delivered of breech presentation by cesarean section is found in Table 5. This significant maternal morbidity of 10 percent must be seriously considered in review of the entire problem of breech management.

With the publication of the article by Smale, Guico and Ensminger⁵ in September 1976, some of our obstetricians went to routine cesarean sections for breech presentations especially in the primigravida. Of note is the fact that several delivered spontaneously before the patient could be prepared for cesarean section. The changing trend of cesarean section use in the management of breech presentation is noted in Figure 3. Table 6 details the indication of cesarean section in the 150 breech presentations delivered by that route during the study period. As can be seen 46 percent of the cesarean sections were done for inadequate measurements on x-ray pelvimetry

while 15 percent were done with "breech" presentations being the only indication.

On review of the study population chart, it was noted that about one-third of the patients were managed without x-ray pelvimetry. Of these, 30 patients (28%) were electively delivered by cesarean section at the onset of labor and the remainder were delivered vaginally..

X-ray Pelvimetry in Breech Management

Table 7 is a review of the details of x-ray pelvimetry as related to parity, fetal weight and mode of delivery using the previously described adequacy criteria of Colle, et al.⁴ Thirteen percent of patients who had adequate x-ray pelvic measurements with small average size babies had cesarean sections without labor. Thirteen percent of patients with adequate x-ray pelvic measurements had cesarean sections done for failure of progress in labor. One-half of these

TABLE 4

Fetal Injuries — Cesarean Section Deliveries 34 Weeks Gestation or Greater 1974-78. N = 1215

Facial lacerations	3
Scalp lacerations	3
Blood loss anemia	2
One preop amniocentesis injury to placenta	
One intraoperative injury to placenta	
Facial nerve injury	1
Total fetal injuries	9

TABLE 5

Major Cesarean Section Maternal Morbidity — Breech Presentation 34 Weeks Gestation or Greater. N = 150

Serious pelvic infections	6
Hemorrhage	4
Serious wound infections	2
Wound dehiscence	2
Bladder perforation	1
Total major morbidity	15

TABLE 6

Indications for Cesarean Section — Breech Presentation 34 Weeks Gestation or Greater.

	74	75	76	77	78	Total
Inadequate measurements						
x-ray pelvimetry	10	6	16	22	15	69
Failure of progress	4	5	4	10	2	25
Premature rupture of membranes	2		5	1	1	9
Excessive size infant	1		2			3
Severe toxemia			1		2	3
Uterine anomaly			1	1	1	3
Fetal distress		1			1	2
Placenta previa		1			1	2
Dysfunctional labor		1			1	2
Diabetes					1	1
Repeat cesarean section			3	1	5	9
"Breech"			3	10	9	22
	17	14	35	45	39	
Total cesarean sections						150

had babies weighing less than 3500 grams. The multiparous patients were often assumed to have adequate pelvic measurements because of a previous vertex vaginal delivery. As can be calculated from the data in Table 7, of the 75 multiparous patients studied by x-ray pelvimetry, 40 percent had inadequate measurements for breech deliveries by the criteria of Colle, Rabin, Weghorst and Quilligan.⁴ Of grave concern were the 22 patients allowed to deliver vaginally with a known inadequate pelvis by x-ray pelvimetry. One of the low Apgar score babies was delivered to one mother in the group of 15 primigravida patients with inadequate x-ray pelvic measurements.

The only fetal death in this series occurred in a multigravida without x-ray pelvimetry, monitoring or consultation. The only brachial plexus injury occurred also in a multigravida without x-ray pelvimetry. The final low Apgar score (5) was delivered of a multigravida without x-ray pelvimetry, monitoring or consultation.

The use of oxytocin during the study period was relatively uncommon. It was used in only ten patients in 1974, one in 1975, one in 1976, three in 1977 and two in 1978. There were no complications associated with the judicious use of oxytocin in these patients as it was used either for induction of a patient with a ripe cervix at term for premature rupture of membranes or for augmentation.

The method of vaginal delivery was largely assisted breech extraction (153) with associated Piper forceps in 33 of these deliveries. There were 30 spontaneous breech deliveries with only four total breech extractions. All total breech extractions were done for cord complications in second stage at the time of membrane rupture, none of which resulted in fetal injury.

Discussion

Currently there is a great outcry by the health planners and consumers concerning the increase in cesarean section rate, the argument being that many of these are unnecessary. In contradistinction to this outcry is the physician's attitude that no risk should be taken in the management of the breech presenta-

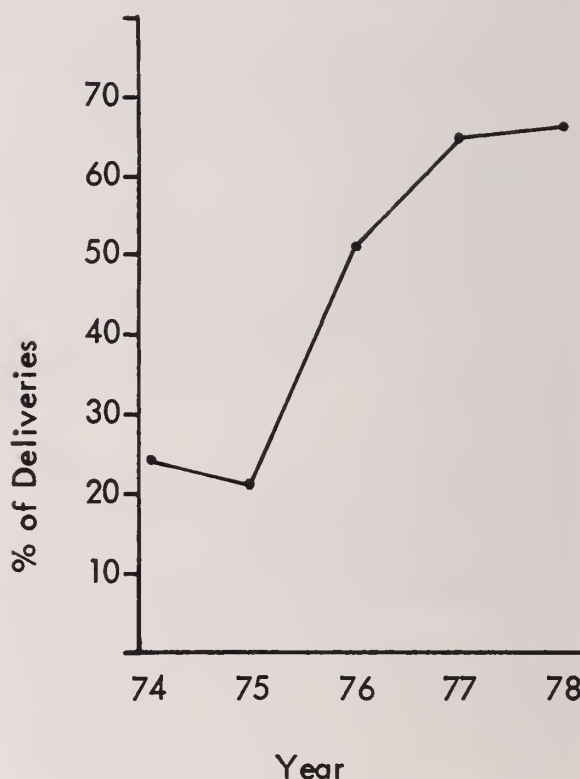


Fig. 3 — Percentage of deliveries by cesarean section of singleton breech presentations 34 weeks gestation or greater by year.

TABLE 7
Mode of Delivery Related to Parity, Fetal Weight and X-ray Pelvimetry —
Breech Presentation 34 Weeks Gestation or Greater.

	Primipara			Multipara			Total #
	<3.5 Kg.	3.5-4 Kg.	>4 Kg.	<3.5 Kg.	3.5-4 Kg.	>4 Kg.	
X-ray pelvimetry adequate							
Vaginal delivery	35	9	4	20	9	4	81
C-section without labor	10	7	1	6	1	2	27
C-section failure of progress	6	5	2	2	1		16
Total adeq. pelvimetry	51	21	7	28	11	6	124
X-ray pelvimetry inadequate							
Vaginal delivery	13	2		7			22
C-section	45	7	2	16	5	2	77
	58	9	2	23	5	2	99
No x-ray pelvimetry							
Vaginal delivery	18	1		49	10	1	79
C-section	16	2	1	11			30
	34	3	1	60	10	1	109
Grand Total							
Deliveries by weight	143	33	10	111	26	9	332

tion. Articles such as that of Smale, et al.⁵ in September 1976 caused many obstetricians to do routine cesarean sections on every patient with a breech presentation.

Cesarean sections have a definite cost to the mother of prolonged hospital stays, spinal or general anesthesia, and increased risk of complications. Also, there is the predictable future of repeat cesarean sections with the additional costs as well as possible risks of ultrasonography for placental localization and amniocentesis for pulmonary maturity.

Practicing obstetricians are aware that the delivery of a breech by cesarean section can also be difficult and occasionally complicated by a brachial plexus injury and/or low Apgar scores.

A review of our data from North Memorial Hospital 1974-78 or 332 singleton breech presentations of 34 weeks gestation or greater, managed by our private family practitioners and obstetricians seems to confirm the recommendations of Rovinsky, et al.³ and

Quilligan's group.⁴

The management of breech presentation requires x-ray pelvimetry evidence of adequacy despite arguments of the contrary.⁶

Breech presentation other than a frank breech, hyperextension of the fetal head, an estimated fetal weight of greater than 3500 grams (biparietal of 9.5 cm. +), maternal obesity (>200 lbs.) and inadequate x-ray pelvimetry measurements are each an indication for delivery by cesarean section. Even the ideal patient with a breech presentation must, in the final analysis, have the labor and delivery supervised by the most experienced obstetrician available, done with the least possible manipulation and done with constant electrode fetal monitoring.

These conditions should allow relatively safe conduct of breech labors, an acceptable cesarean section rate and a reasonable perinatal morbidity and mortality.

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Cover Photograph "Alpine Moorings"

The cover photograph was taken by Dr. Reinhold O. Goehl, Jr. in September, 1981, from the northwest shore of a small lake (Plansee) in Northern Austria just a short distance west of the lovely Bavarian village of Oberammergan, Germany. Dr. Goehl and his wife were vacationing in Europe at that time celebrating their 25th wedding anniversary. The view was spectacular in many directions at this particular spot where they stopped to have lunch.

Dr. Goehl used his 35 mm Nikon FE camera, a 43-86 mm zoom lens, and Ektachrome 64 film.

He is an obstetrician/gynecologist practicing in Minneapolis and has had his photographs on the covers of MINNESOTA MEDICINE many times. Dr. Goehl has also been a winner of the Minnesota Medicine best cover award.

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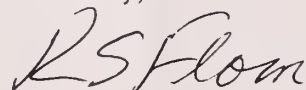
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Allegations

Negligence and lack of informed consent in performing a proctoscopy and barium enema.

Facts of Case

Dr. I, an internist, examined the 85 year old male patient for complaints of easy fatigability and shortness of breath. Among other diagnostic studies, a barium enema and proctoscopy were ordered. Scheduling of these procedures was done by the x-ray department staff. On May 12, Dr. I performed the proctoscopy and snared a polyp. He did not document its location. On May 13, Dr. R, a radiologist, performed the barium enema. During manipulation of the Bardex balloon, there was a perforation of the rectum. X-rays showed the extravasation of contrast media to be on the posterior aspect of the rectum, but the exact site of the perforation could not be identified. A general surgeon was consulted for placement of a diverting colostomy.

The patient underwent a colostomy closure on July 13. Postoperatively, he developed a mechanical obstruction of the bowel at the closure site. He was returned to surgery on July 19 and operative findings revealed significant induration of the anastomosis. Because of bowel distension and inability to mobilize the bowel, the surgeon was unable to resect the indurated area. The colostomy was therefore replaced for closure at a later date. However, the patient decided against further surgery and was discharged on July 29 with a permanent colostomy.

Disposition

Settlement of \$175,000 was made on behalf of Dr. I and Dr. R.

Reasons for Settlement

Experts disagreed as to the prevailing standard of care regarding performance of barium enemas fol-

lowing polypectomies. Other factors leading to the determination that this case was indefensible were:

1. No explanation of any potential risks or complications of either proctoscopies or barium enemas was given to the patient;
2. There was no communication from Dr. I to the x-ray scheduling personnel, or to Dr. R about the polypectomy. It was documented in the patient's medical record, but Dr. R did not review the record prior to performing the barium enema. Dr. R's testimony revealed that he would not have done the barium enema if he had known about the polypectomy.
3. A causation issue was presented regarding the polypectomy and the rectal perforation. The patient's attorney argued that they occurred at the same site. The physicians were unable to successfully refute this allegation due to the lack of documentation of the location of the snared polyp.

Risk Management Comment

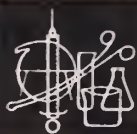
Lack of communication between treating physicians is a frequent cause of patient injuries and malpractice claim losses. All physicians involved in a patient's care are responsible for communicating pertinent information to others dealing with the patient, and reviewing the patient's medical record for any factors which affect the course of treatment.

Inadequate medical record documentation has been identified as the leading non-medical reason that an otherwise defensible malpractice claim is lost at trial or requires settlement. Physicians must make sure that record entries include sufficient information to adequately identify *what* was done for the patient, *why* it was done, and any *complications* that occurred during treatment.

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prescribing, see complete prescribing information in CO. literature or PDR. The following is a brief summary.

WARNING

Drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy directed to the individual. If this combination represents the age so determined, its use may be more convenient in initial management. Treatment of hypertension and edema is static, but must be reevaluated as conditions in each patient warrant.

Indications: Concomitant use with other potassium-sparing agents such as spironolactone or amiloride. Further use in progressive renal or hepatic dysfunction, hyperkalemia, or elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Contraindications: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is administered, potassium tablets should not be used. Hyperkalemia occurs and has been associated with cardiac irregularities. It is likely in the severely ill, with urine volume less than one liter, the elderly and diabetics with suspected or confirmed potassium deficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, or K^+ intake. **Associated widened QRS complex or arrhythmias requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy is weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and their use may appear in breast milk. If their use is essential, the mother should stop nursing. Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving oral fluids, and during concurrent use with amphotericin B, corticosteroids or corticotropin [ACTH]). Periodic BUN and creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Cumulative effects of the drug may develop in patients with impaired renal function. Thiazides should be used with caution in patients with impaired hepatic function. They can precipitate coma in patients with severe liver disease. Observe carefully for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic and hemolytic anemia have been reported with thiazides. Thiazides may cause manifestation of diabetes mellitus. The effects of oral anticoagulants may be increased when used concurrently with hydrochlorothiazide; dose adjustments may be necessary. Clinically insignificant changes in arterial responsiveness to norepinephrine have been reported. Thiazides have also been shown to increase the blocking effect of nondepolarizing muscle relaxants such as tubocurarine. Triamterene is a weak folic acid antagonist. Do not use in blood studies in cirrhotics with splenomegaly. Antihypertensive effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. Triamterene has been found in renal stones in association with the other usual components. Therefore, 'Dyazide' should be used with caution in patients with histories of stone formation. A few occurrences of acute renal failure have been reported in patients on 'Dyazide' when treated with indomethacin. Therefore, caution is advised in administering nonsteroidal anti-inflammatory agents with 'Dyazide'. The following may occur: transient elevated BUN, creatinine or both, hyperglycemia and glycosuria (diabetic requirements may be altered), hyperuricemia and gout, sodium intoxication (in hypokalemia), decreasing alkali reserve, possible metabolic acidosis. 'Dyazide' interferes with fluorescence measurement of quinidine. Hypokalemia is uncommon with 'Dyazide', but should it develop, corrective measures should be such as potassium supplementation or increased dietary intake of potassium-rich foods. Corrective measures should be used cautiously and serum potassium levels determined. Continue corrective measures and 'Dyazide' should be discontinued if laboratory values reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Concurrent use of chlorpropamide may increase the risk of severe hypotension. Serum PBI levels may decrease without signs of thyroid disease. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function.

Thiazides may add to or potentiate the action of other antihypertensive drugs.

Thiazides reduce renal clearance of lithium and increase the risk of lithium toxicity.

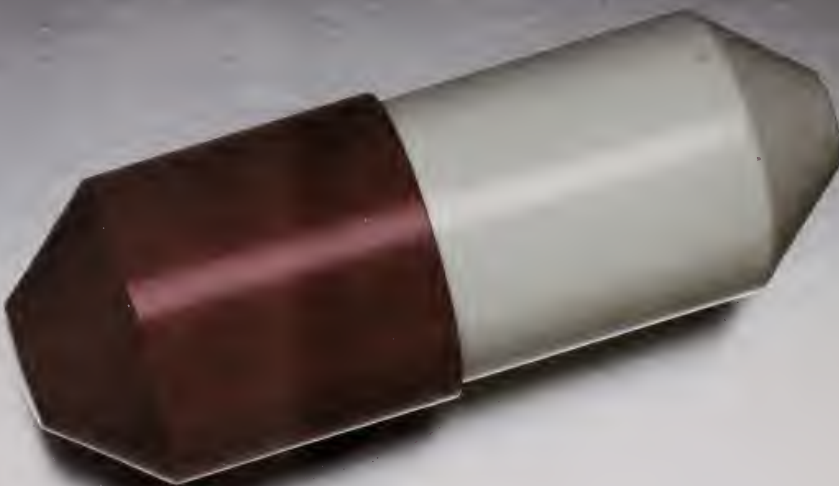
Side Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, pruritus, other dermatological conditions; nausea and vomiting, constipation, other gastrointestinal disturbances; postural hypotension (may be aggravated by alcohol, barbiturates, narcotics). Necrotizing vasculitis, paresthesias, icterus, hepatitis, xanthopsia and respiratory distress including pneumonia and pulmonary edema, transient blurred vision, sialadenitis and vertigo have occurred with thiazides alone. Triamterene has been found in renal stones in association with the other usual components. Rare incidents of acute interstitial nephritis have been reported. Impotence has been reported in a few patients on 'Dyazide', although a causal relationship has not been established.

How Supplied: 'Dyazide' is supplied in bottles of 1000 capsules; in Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100.

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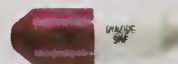
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Mortician Retrieval of Donor Globes

The Minnesota Experience

TIMOTHY BONNER, M.D.*; DONALD J. DOUGHMAN, M.D.*; ELIZABETH MINDRUP, B.S.*; and DALE STROUD, B.S.*

Between January 1, 1976, and November 1, 1981, 183 morticians have been certified as eye enucleators by the Minnesota Lion's Eye Bank. Seventy-seven have enucleated a total of 434 eyes. One hundred twenty-six of these eyes were used for transplantation. The contamination rate of mortician enucleated eyes on arrival to the Eye Bank was approximately twice that of eyes enucleated by medical personnel. However, after antibiotic treatment by the Eye Bank technician the residual contamination rate was similar, and there was no difference in the eventual contamination rate of these eyes during storage. Results of a questionnaire regarding mortician's attitudes towards the program indicate that the largest problem facing the mortician is approaching the family for permission to remove the eyes. This has been a valuable program to the Minnesota Lion's Eye Bank contributing 126 eyes to patients in this state and region who would not have received a transplant had these eyes not been removed.

THE PRIMARY FUNCTION of a modern Eye Bank is to provide quality corneal tissue in adequate amounts to meet the needs of the patients and surgeons it serves. Although many papers have been published regarding quality control in processing donor corneas, little has been written about the use of nonmedical personnel to harvest donor material.¹ Since 1976, the Minnesota Lion's Eye Bank has been teaching licensed morticians the technique of eye enucleation in an attempt to increase the number of eyes donated to the Eye Bank. It is the purpose of this paper to examine the results of this program with regard to the quality and quantity of these donor eyes.

Materials and Methods

The records of the Minnesota Lion's Eye Bank were examined from January 1, 1976 to November 1, 1981. The number of eyes removed by morticians as well as their microbiological data and eventual fate (transplantation, research or teaching) were noted. In addition, microbiological data on eyes collected by medical personnel during the same period were tabulated.

Eyes received by the Minnesota Lion's Eye Bank were stored at 4°C until processing. For each eye

submitted, a record of the donor's name, age, time of death, and cause of death was kept. Bacterial and fungal contamination were tested for in all eyes that were going to be used for transplantation. Transplants were performed either as "fresh" (whole globes stored at 4°C), as corneal scleral segments stored in tissue culture medium at 4°C (M-K media), or as organ cultured (corneal scleral segments kept in MEM at 37°C). Details of tissue culture storage at 4°C and 37°C have been previously reported,^{2,3,4} as well as the criteria to determine transplantability and the procedures used for microbiological testing in our Eye Bank^{2,5}. Not all eyes received by the Eye Bank were cultured. Only those eyes received during week days when our full time Eye Bank technician was available were cultured.

In our attempt to determine what factors were involved in mortician participation in the eye removal program, a questionnaire was developed and mailed to all certified morticians (Table 1). All questions were answered on a graded response scale and written comments were encouraged. For analysis, each returned questionnaire was identified as coming from morticians who had enucleated ten or more eyes, morticians who had enucleated less than 10 eyes, morticians who had never enucleated eyes, and morticians who had become inactive after having submitted eyes.

Results

As of November 1, 1981, 183 morticians had been

*University of Minnesota, Departments of Ophthalmology and Mortuary Science.
Send reprint requests to Donald J. Doughman, M.D., Box 493 Mayo Building, University of Minnesota, Minneapolis, MN 55455.

The University of Minnesota is an equal opportunity educator and employer.
This study was supported in part by the Lion's Club of Minnesota and Research to Prevent Blindness, Inc.

TABLE 1

Questionnaire Sent To All Certified Morticians

You answered these questions concerning the seminar at its conclusion. Please reconsider these items now so that we can see if your opinion has changed in the interim.

Instruction in these topics was	Unsatisfactory			Excellent		
1. Eye Banking	1	2	3	4	5	6
2. Legal Aspects	1	2	3	4	5	6
3. Care of Instruments and Sterile Technique	1	2	3	4	5	6
4. Anatomy	1	2	3	4	5	6
5. Video Presentations	1	2	3	4	5	6
6. Restoration	1	2	3	4	5	6
7. Practice Session	1	2	3	4	5	6
8. Eye Bank Tour	1	2	3	4	5	6
9. Length of Course	1	2	3	4	5	6

If unsatisfactory, how long should it be?

Other:

10. Course Materials	1	2	3	4	5	6
11. Arrangements	1	2	3	4	5	6
12. Instructors	1	2	3	4	5	6

13. How competent did you feel at the conclusion of the course?	Incompetent			Very Competent		
	1	2	3	4	5	6

14. How much would you value additional information on how others approach the family?	Useless			Extremely Useful		
	1	2	3	4	5	6

15. How interested are you in attending a refresher course?	Not Interested			Very Interested		
	1	2	3	4	5	6

If this interests you, what topics would be most helpful?
 _____ Care of instruments and sterile technique

_____ Legal aspects of enucleation

_____ Anatomy of the eye

_____ Restorative techniques

_____ Family Counseling

Other: _____

Concerning the harvesting of eyes:

Please rate the importance of the following sentiments in making harvesting difficult for you:

16. Resistance to harvesting which you have encountered in hospital or medical personnel	Not Important			Very Important		
	1	2	3	4	5	6
17. Uncomfortable feelings you may have about performing enucleation	1	2	3	4	5	6

If this is important is it due mainly to:

_____ inexperience

_____ infrequent use of skills

Other: _____

TABLE 1 (continued)
Questionnaire Sent To All Certified Morticians

- | | | | | | | | |
|--|---|---------------|---|---|----------------|---|--|
| | | Not Important | | | Very Important | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |
18. Feelings of reluctance you may have towards approaching the family

If this is important is it due mainly to feelings of:

- _____ interfering emotionally with the family
- _____ not wanting to upset the family so that they might evaluate your services unfavorably

Other: _____

- | | | | | | | | |
|--|---|----------|---|---|-------------|---|--|
| | | Inactive | | | Very Active | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |
19. Is the Lion's Club active in encouraging its eye Bank Program in your area?

Please rate the importance of the following factors in facilitating eye collection:

- | | | | | | | | |
|--|---|---------------|---|---|----------------|---|--|
| | | Not Important | | | Very Important | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |
20. Your location or proximity to hospital
21. Cooperation and assistance from hospital and medical personnel
22. Your feeling at ease with performance of enucleation
23. Local attitudes (popularity) or approval of the organ donor concept
24. Support of Eye Bank Program by local Lion's Club
25. The ready availability of sterile instruments or sterilizing facilities.

Please rate your experiences on the following interactions with the Ophthalmology Department:

- | | | | | | | | |
|--|---|----------------|---|---|---------------------|---|--|
| | | Unsatisfactory | | | Highly Satisfactory | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |
26. Availability of someone in the Department to answer questions
27. Shipments to you of eye boxes or other items
28. Response from the Department as to the use of tissue
29. Feedback from the Department as to condition of tissue you've submitted and the quality of your collection technique
- | | | | | | | | |
|--|---|----------|---|---|--------------------|---|--|
| | | No Value | | | Extremely Valuable | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |
30. What is the value to you of feedback in 28 and 29 above?

trained in the program. Seventy-seven (42%) of these morticians had enucleated a total of 434 eyes. The most active mortician had submitted 32 eyes. Ten others had submitted ten or more eyes. Thirty-five had submitted from one to ten eyes, and 31 submitted eyes on only one occasion. One-hundred six morticians had never submitted eyes to the Eye Bank. To determine if time since certification affected mortician participation in the program, each training session was studied as to the number of eyes submitted (Table 2). A fairly constant relationship between eyes submitted per month and the number of morticians certified is noted. The Figure shows how the mortician's eyes were used. Of the 434 total eyes submitted by morticians, 126 (29%) were used for transplants, 98 (22.6%) were used for teaching and 210 (48.4%) were used for research. Of those eyes used for research, 66 had been intended for transplantation

but were not used either because storage time exceeded that felt safe for transplantation⁵ or the surgeon ultimately decided that the donor was too old and chose younger eyes available at the time of transplantation. Therefore, 44% (192) of the eyes submitted by the morticians were judged transplantable by our current Eye Bank criteria⁵. Five corneas intended for transplantation were not used because surgery was cancelled at the last minute and nine became contaminated while in culture. The remaining eyes were allocated to research or teaching according to previously published criteria⁵.

The results of the microbiological studies performed during the period of October 1977 to February 1980 are presented in Tables 3 and 4. Of the 198 eyes submitted by morticians, 90 (45.4%) were tested for contamination (Table 3). Eighty of these (88.9%) yielded a positive culture before antibiotic treatment

TABLE 2
Comparison of Training Session's Productivity*

Session Date	Dec. 1975	March 1976	Dec. 1976	April 1977	April 1978	April 1979	March 1980	March 1981	Total
Number Trained	24	23	24	24	23	23	15	27	183
Number Who Have Submitted Eyes	15	13	11	12	10	9	4	3	77
Total Eyes Submitted	114	84	54	73	63	28	12	6	434
Months Since Trained	72	69	60	56	44	32	20	8	
Eyes Per Trainee Per Month	.066	.053	.038	.054	.062	.038	.040	.028	$\bar{X} = .047$ $S = .0133$

*Through November 1981

TABLE 3
Microbiological Studies, Eyes Harvested by Morticians

Eyes Harvested — Total 90 Organisms Identified	Eyes Contaminated		Postwash		In Organ Culture	
	Prewash # of Eyes	%	# of Eyes	%	# of Eyes	%
Totals Contaminated	80	(100%)	21	(100%)	5	(100%)
Coag. Neg. Staph	54	68%	10	48%	—	—
Corynebacterium	12	15%	2	10%	—	—
Pseud. aerug.	5	6%	1	5%	—	—
α Strep. Non-D	2	3%	1	5%	—	—
Candida sp.	—	—	—	—	—	—
Staph. aureus	12	15%	2	10%	—	—
α Strep. D	1	1%	—	—	—	—
Enterobacter	—	—	1	5%	—	—
E. coli.	1	1%	—	—	—	—
Klebsiella sp.	3	4%	—	—	—	—
Diphtherioids	1	1%	—	—	1	20%
Bacillus sp.	1	1%	—	—	—	—
Proteus sp.	6	8%	2	10%	—	—
Penicillium	—	—	—	—	1	20%
Alternaria	—	—	—	—	1	20%
Chromobacter	—	—	—	—	1	20%
Cephalosporium	—	—	—	—	1	20%
Uncertain	3	4%	4	20%	—	—

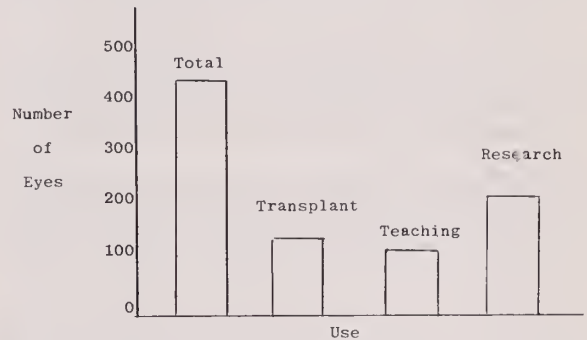
("pre-wash"). Twenty-one positive cultures (23.3%) were obtained after antibiotic treatment (post-wash). Five eyes (5.6%) became contaminated while in culture.

Table 4 shows similar data obtained from 670 eyes harvested during the same time period by medical personnel, usually first year ophthalmology residents. Two hundred seventy-one eyes (40%) were tested, 133 of which (49%) were contaminated in "pre-wash" cultures. Forty-six (17%) were contaminated in "post-wash", and 23 (8.5%) became contaminated during organ culture storage. Organisms isolated are listed in the tables.

One hundred fifty-four questionnaires were mailed. Ninety-seven (63%) were returned and analyzed. The rate of return varied from 60% in the group who had never submitted eyes to 80% of those who had harvested 10 or more eyes. There were different responses from the groups to some of the questions. Those who had submitted eyes on only one occasion expressed more interest in refresher courses than the rest of the groups. Those who had become inactive after having submitted eyes listed resistance from hospital and medical personnel and difficulty in approaching the family to obtain permission as important factors in making enucleation difficult. Uncomfortable feelings on the part of the mortician regarding enucleation was more important to those who had not submitted eyes than to those who had. With regard to factors facilitating enucleations, three factors were noted. Those having submitted ten or more eyes placed more im-

portance on feeling at ease with the procedure than any other group. One-time submitters placed more importance on local feelings and attitudes than did other groups. Finally, the importance of local Lion's Club support was stressed most by one-time submitters and those who had become inactive. The overwhelming comment from all groups was that approaching the family to initiate discussion of eye donation was an uncomfortable task. Only two persons commented that a mortician should bring up the subject of enucleation with the family, while seven said they refused to initiate the topic under any circumstances, waiting instead for the family or next-of-kin to bring up the subject. The general lack of public education and publicity was mentioned by many of the respondents, a fact well known by people in-

Use of Mortician-Harvested Eyes,
January 1976 - November 1981



Figure

TABLE 4

Microbiological Studies, Eyes Harvested by Medical Personnel

Eyes Tested — Total 271 Organisms Identified	Eyes Contaminated		Postwash		In Organ Culture	
	# of Eyes	%	# of Eyes	%	# of Eyes	%
Totals Contaminated	133	(100%)	46	(100%)	23	(100%)
Coag. Neg. Staph.	62	47%	21	46%	7	30%
Corynebacterium	23	17%	2	4%	1	4%
Pseud. aerug.	8	6%	4	9%	2	9%
α Strep. Non-D	7	5%	7	15%	—	—
Candida sp.	7	5%	8	17%	4	17%
Staph. aureus	6	5%	2	4%	—	—
α Strep. D	6	5%	2	4%	—	—
Serratia sp.	3	2%	1	2%	—	—
Enterobacter	2	2%	—	—	—	—
Acinetobacter	1	1%	—	—	—	—
Torulopsis g.	2	2%	—	—	—	—
E. coli.	2	2%	—	—	—	—
Klebsiella sp.	2	2%	2	4%	—	—
Diphtherioids	1	1%	—	—	—	—
Bacillus sp.	1	1%	—	—	—	—
α Strep.	1	1%	—	—	—	—
Proteus sp.	1	1%	1	2%	—	—
Lactobacillus	1	1%	—	—	—	—
Penicillium sp.	0	—	—	—	2	9%
Sporothrix sch.	0	—	—	—	1	4%
Uncertain	10	8%	4	9%	7	30%

volved in eye banking over the years. Other factors in mortician inactivity were personal reasons such as a change in the business situation or location, retirement, and in one case a threatened law suit.

Discussion

This program is an important source of donor material for the Minnesota Lion's Eye Bank providing approximately 25% of the tissue used for transplantation during the period studied. It is noteworthy that almost one-half of the morticians trained will submit at least one eye. Based on the data in this study, we have received one eye per month for every twenty morticians trained.

In terms of the quality of donor eyes submitted, 29% of those eyes harvested were transplanted. However, approximately 50% could have been transplanted had they not passed the safe storage date, become contaminated during storage or had surgery not been cancelled at the last minute. Richards and Catzen in 1975 reported a transplant rate of 68% of the eyes received in their Eye Bank³. Differences in criteria for utilizing transplantable tissue may explain this difference.

The microbiological data revealed one major difference between the eyes harvested by morticians and those harvested by medical personnel. A substantially higher rate of contamination before the antibiotic washing done during Eye Bank processing (90% for morticians versus 49% for medical personnel) was noted. However, after the antibiotic washing the rates were essentially the same, (23% versus 17%). In addition, the number of eyes contaminated during organ culture, as well as the type of organisms found during culture is approximately the same for each group. One explanation for the initial difference in contamination rate may be that the standard sterility procedures used by medical personnel were modified to encourage and facilitate mortician removal of eyes. Another more likely reason lies in the fact that morticians do not irrigate the conjunctival

sac with antibiotic solution prior to enucleation while ophthalmology residents do. Although antibiotics used prior to enucleation have been previously reported to reduce the bacterial flora on donor eyes⁴, we have elected not to have the morticians use the antibiotic wash because of the costs involved in maintaining antibiotic drops at the mortuaries. The antibiotic wash used during processing seems to sterilize the eyes so that afterward the sterility rate is the same as for those eyes enucleated by other medical personnel. Therefore, this higher contamination rate is not a significant point in terms of the eventual microbiological fate of these eyes. Another explanation of this difference in contamination rate may be the difference in the donors. Most of the eyes removed by medical personnel came from the University Hospitals where patients may have been treated with antibiotics prior to death which may have sterilized the ocular tissues. Mortician eyes came from donors who were less likely to have been on antibiotics. Unfortunately our data are unable to tell us which donors were or were not on antibiotic treatment.

Although we recognize the inherent problems of interpreting the subjective data from the questionnaires, there appear to be some differences between the active enucleators and those who do not enucleate based upon their response to the questions. Those who remove many eyes felt more at ease with enucleation and felt less dependent upon local attitudes and the local Lion's Clubs. The response from the infrequent removers seems to suggest a certain lack of confidence either in the program or in their ability to remove eyes, where as those who were frequent eye removers were very confident in the program and in their ability to remove eyes. This latter group also had less difficulty approaching families to discuss eye donation. However, the problem of obtaining permission for enucleation or approaching the family to initiate discussion of enucleation was an uncomfortable task for most of the morticians, a problem previously acknowledged by Linde⁶.

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5. Polack, FM, Locatcher-Khorazo, D, Gutierrez, E: Bacteriologic study of "donor" eyes. *Arch Ophthalmol* 78:219, 1967.
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For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

August, 1984

20-22 The Knee: Current Concepts of Treatment & Techniques; American Academy of Orthopaedic Surgeons, The Kahler Hotel, Rochester, MN; CONTACT: 312/822-0970

20-22 Advanced Cardiac Life Support Course; North Memorial Medical Center; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535

24-25 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN; CONTACT: Kari Ebert, 612/221-3991.

August 26-September 1 Transplantation Society Congress; U of MN Medical School, Mpls., MN; CONTACT: Bart Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012

27-28 Basic Life Support Course, Methodist Hospital, St. Louis Park, MN; CONTACT: Janell Haugen; 612/932-5189

September, 1984

2-3 Annual Meeting, MN Orthopedic Society; Winnipeg; CONTACT: Jack M. Bert, M.D., 307 Gallery Medical Bldg., 17 West Exchange St., St. Paul, MN 55102.

10-14 47th Annual Radiology Course: Radiology/84 — Thoracic Imaging; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

10-21 Second Annual Graduate Occupational Health & Safety Institute; Univ. of MN Medical School; St. Paul-Ramsey; CONTACT: Ruth McIntyre, Assoc. Director, CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980

13-14 Urology Update for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Med. Center, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

13-14 Medical Directors Conference; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-15 Urology Today; St. Paul-Ramsey Medical Center; Sheraton Midway Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

14-15 Orthopaedic Nursing in the 80's — New Concepts and Challenges; Metropolitan Med. Center & Hennepin County Med. Center; Pillsbury Auditorium; CONTACT: Rose Jagodzinski, 701 Park Ave. So., Mpls., MN 55415, 612/347-2812.

14-15 Common Problems in Cardiology; Park Nicollet Medical Foundation; CONTACT: Elaine Anderson, 5000 W. 39th St., Minneapolis, MN 55426; 612/927-3703.

15 New Developments in Anxiety Relating to Medical Illness; North Memorial Medical Center; Vance C. DeMong Auditorium, North Memorial Medical Center; CONTACT: Molly Kundering, Dept. of Education, 3300 Oakdale Avenue North, Mpls., MN 55422, 612/520-5455.

17-19 Topics in Geriatric Medicine: Management of Alzheimer's Disease; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

17-19 Triennial International Symposium on Male Sexual Dysfunction; Mayo Clinic/Mayo Foundation, 200 First St. SW, Rochester, MN 55905; CONTACT: William L. Nietz.

18 Smoking & Pregnancy — New Strategies for Health Care Providers; American Lung Association of Ramsey County; Sheraton Midway Hotel, St. Paul; CONTACT: Ruth Pierce/Marty Hamlin, 614 Portland Avenue, St. Paul, MN 55102; 612/224-4901.

19 Impotence and Penile Implants; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20-22 7th Annual Trauma & Critical Care Seminar; University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

21-22 Advanced Trauma Life Support; University of MN-Duluth Medical School; CONTACT: C. L. Barbee, M.D., 1000 E. First St. — Suite 203, Duluth, MN; 218/727-7259.

22 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700 ext. 1117.

28 Problems in Family Practice; The Duluth Clinic, Ltd; Holiday Inn, Duluth; CONTACT: J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805; 218/722-8364.

September (continued)

28 Northwestern Pediatric Society Meeting; Northwestern Pediatric Society; Chanhassen Dinner Theatre, Chanhassen, MN; CONTACT: Fredric Kleinberg, M.D., Dept. of Pediatrics Mayo Clinic, Rochester, MN 55905; 507/284-2922.

October 1984

3-5 Annual Internal Medicine Review Course; Endocrinology, Cardiology and Hematology; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

4-13 Advance Cardiac Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Joan Peterson, R.N. 612/932-5419.

8-12 Professionals in Residence; Hazelden Training & Professional Education Dept., Center City, MN; CONTACT: Hazelden Training & Prof. Education Box 11, Center City, MN 55012; 612/257-4010

11-12 Clinical Nutrition for Practicing Physicians; University of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

11-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

12 6th Annual Adolescent Medicine & Health Care Conference: Adolescent Sexuality; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

12-14 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

13 Current Trends in Ophthalmology — 8th Annual; Mount Sinai Hospital; Hotel Sofitel, Bloomington; CONTACT: Nancy Pasell, Mount Sinai Hospital, 2215 Park Avenue, Mpls., MN 55404; 612/871-3700, Ext. 1117.

15-19 Practice Management Program: Marketing Strategies; Minnesota Medical Association; Grand Rapids, Detroit Lakes, Mankato, Marshall, St. Paul; CONTACT: Eugenia Kassir, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414; 612/378-1875.

17-20 Principles of Colon and Rectal Surgery; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware Street, SE, Mpls., MN 55455; 612/373-8012.

18-20 The 17th Annual Orthopaedic & Trauma Seminar; Hennepin County Medical Center, Pillsbury Auditorium, 701 Park Avenue So., Mpls., MN; CONTACT: Ramon B. Gustilo, M.D., 701 Park Ave. So. 813, Minneapolis, MN 55415.

24-26 Annual Autumn Seminar in Obstetrics & Gynecology; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455; 612/373-8012.

25-27 Emergency Medicine for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical School; CONTACT: Ruth K. McIntyre, Assoc. Dir. CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

26-27 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN. CONTACT: Kari Ebert, 612/231-3991.

27-28 Update in Cardiology; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

29-31 Clinical Reviews; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

31 Infections in the Elderly; Hennepin County Medical Center; Minneapolis, MN 55415; CONTACT: R.B. Breitenbucher, M.D., 701 Park Ave. So., Mpls., MN 55415; 612/347-2323.

November, 1984

2 Stroke Care Update — 1984; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

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(Continued on page 460)

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(Continued on page 462)

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(Continued from page 461)

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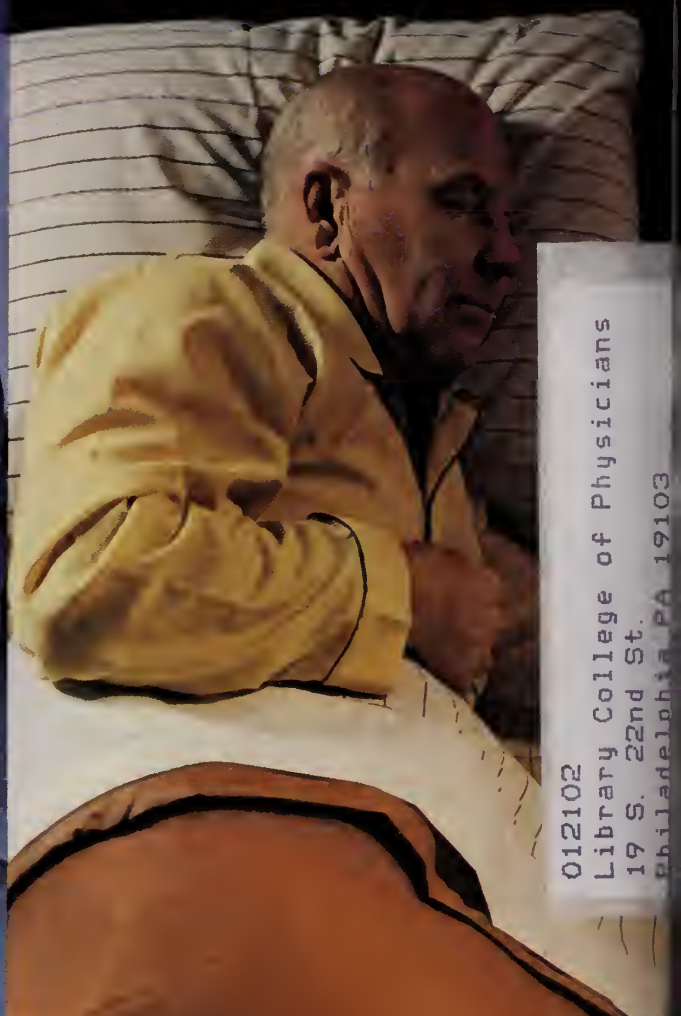
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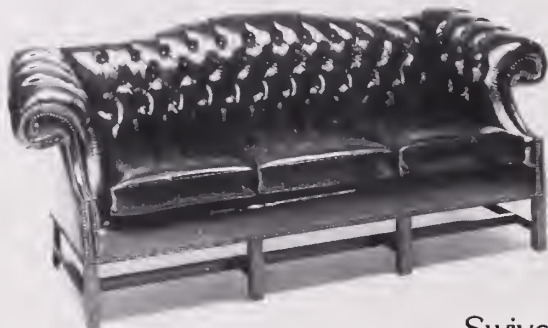
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President's Letter



Organized Medicine — Will We be a Voice or a Whisper?

It is disturbing to me that in these troubled times, when there is need for togetherness, strength in numbers, hanging together or hanging apart, etc., there are physicians who choose not to join organized medicine. Of the estimated 8,000 physicians in Minnesota, 1,841 are not MMA members, 3,475 are not AMA members.

I have tried to ask myself why? I ask you? Check the boxes applicable.

- ☐ Is it lack of understanding of what a medical association does?
- ☐ Are we so poorly compensated that we can't afford it?
- ☐ Do we feel, as long as others are willing to do it for me, I will go along for the free ride?
- ☐ I've never been contacted.
- ☐ All of the above.

I hope I can make a case for your joining your county medical society, the Minnesota Medical Association, the American Medical Association, and supporting MINNPAC/AMPAC. Even for members, it may be useful to be reminded of what organized medicine does. I feel our dues structure is fair:

County Dues	(Yours)
MMA Dues	375.00
AMA Dues	330.00

Chiropractors in an adjoining state are assessed \$1,000 periodically, and there seems to be little grumbling as they realize the need for the political process. If there were more people joining, fees would be less. At the AMA, greater than 50 percent of the income for our activities and, in our behalf, comes from non-dues revenue. Dues are also a deductible business expense.

What does your membership do for *you*?

Insurance programs, including health, life, liability, disability, because of reduced group rates, can go a great way towards paying your dues dollars. This has often been quoted as, and is still, a valid reason for joining. But there is more. On the state and national level, AMA and the Minnesota Medical Association have one of the most effective legislative lobbying efforts anywhere. These efforts give you a voice in how legislation is shaped and how you practice. This is perhaps the most important way your dues dollars are spent. These efforts can't continue to be effective if they represent only 46 percent of the physicians nationally. Is it fair to let 46 percent of the physicians pay for these efforts in behalf of *all* physicians?

To quote an AMA brochure, "The quality of health care deeply affects us all. Whether it be in the area of socio-economic medicine, public health, medical education, or scientific development, vital issues require strong direction from the medical profession

PRESIDENT'S LETTER

— direction provided by the American Medical Association. The AMA's leadership position is unique. It is the only national organization representing all physicians and all specialties with input and support from county and state medical societies; the only organization to provide a forum for debate and a democratic process for determining medicine's stand on national issues."

Let me list a few of the MMA and AMA accomplishments:

- Prevented the "chiropractic includes most anything" act from passing the legislature.
- Supported child passenger restraint legislation.
- Were instrumental in adopting workable Workman's Compensation revisions.
- Sponsored workshops for x-ray machine operators in your offices.
- Developed do-not-resuscitate guidelines; one of the first associations in the U.S. to do so.
- Founded the wholly-owned MMIE which resulted in lower professional liability premiums even if you purchased brand X.
- Offers new marketing services, computer sales.
- Offers contract advice to aid in protecting you with all the new delivery plans.
- Broadened representation in the MMA House of Delegates to include all specialties.
- Created a new section for hospital medical staffs, residents, and student members to offer even more input.
- On a national level, the Rostenkowski Bill was defeated by the AMA efforts. Passage would have mandated Medicare assignments.
- The AMA effectively prevented passage of legislation that would have mandated prospective pricing for physician's services, that is, the mandatory DRGs.

There are approximately 500 bills monitored or sponsored by your MMA legislative lobbyists every year.

Ahead lie concerns for:

Cost/quality issues

Ethics

Adequate funding for education and research

Chiropractors trying to expand their scope of practice

Increased third party intrusion into medical decisions

Mandatory Prospective Pricing for Physicians (DRGs)

And the list could go on.

Space does not permit me to tell you legislation that would have passed if we weren't there to block or modify it.

Physicians would not agree on everything that the Medical Association would do any more than you agree with everything that your church affiliation stands for.

Those of us who have chosen to work in your behalf in organized medicine are impressed by the quality and dedication of our staff on the state and national level. I can assure you, you are getting your dues' worth and more. I am impressed with the democracy that we have in our organization. Dr. Richard Galbraith helped pass a resolution to insure face masks would be used in organized hockey. This passed not only through his county medical society but also through our state association and finally was introduced at the AMA where it is now national policy. So, if you have a concern, it can become national policy. The MMA and AMA truly provides an open forum that enables all physicians to positively influence medical practice in what's best for you *and* our patients.

There are mucho hours of dedicated time by physicians who work in your behalf with no compensation, with significant loss of income from time away from their practices. (I go to so many meetings at HAC, that when I die I won't go to heaven — I'll go to the Health Associations Center!) It is our choice to do so because we believe in what we are doing. And if you agree with what I'm saying, I hope that you'll become active in your local and state medical association, perhaps as a delegate; or joining a speakers' bureau so you might explain to the public why there are cost dilemmas in our medical care and our

PRESIDENT'S LETTER

concerns for the quality of care; or perhaps you have a special area of expertise you could share with your association.

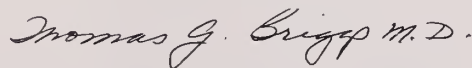
For those that don't have the desire, we wish that you would at least contribute — as a dues-paying member of your association, locally and nationally. You should feel some dedication and support to your professional organization. Allowances have already been made for physicians who are starting out, are retired, or are student or resident members, and for special circumstances of hardship.

But for most of us, those who are full-time practicing physicians should have no excuse. Specialty societies do contribute. But we need a central organization that we can all rally around. If we had additional resources, much more could be done, for instance, to explain our positions through increased media efforts.

Those who are members, I urge you to find out who in your practice areas are not members of organized medicine and make an effort to include them in our federation. These names are available through our state association. Also, ask for "86 Reasons Why Your MMA Membership is Worth Every Dollar" and "Where AMA Stands on Issues."

If you are not a MMA or AMA member, please write the Minnesota Medical Association at 2221 University Avenue S.E., Minneapolis, Minnesota 55414 or call collect (612) 378-1875 and request an application for membership.

WE MUST BE ABLE TO SPEAK IN A UNITED VOICE, NOT A WHISPER.



Thomas G. Briggs, M.D.
President
Minnesota Medical Association

P.S. Thanks to the 6,159 who are MMA members and 4,525 who are AMA members!

Noninvasive Vascular Technology and its Applications

The Minnesota Noninvasive Vascular Society is an informal local chapter of the Society of Noninvasive Vascular Technology (SNIVT) hoping to expand its membership. Four meetings annually to address a current topic in noninvasive vascular technology will be held. Dues will be \$5/year, and cover meetings, mailings and a newsletter. If interested please contact Beth Schneider at Methodist Hospital, (612) 932-5314.

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Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: The Struggle by Independent Physicians for a Place in the Twin Cities Market

Sixth In A Series

"The doctor shortage of recent years is now becoming a doctor surplus — turning the medical marketplace into a struggle for survival. In more and more areas, doctors are battling one another for patients. Many recently licensed physicians have difficulty starting practices. Established doctors see their patients taken away by physicians' groups and prepaid health plans."

"For Doctors, Too. It's A Surplus," U.S. News and World Report, pages 62 to 64, December 19, 1983

"Nationally, we are heading for a doctor surplus. In some states like California, we already have too many orthopedic surgeons. There will be plenty of physicians to staff the efficient organized systems of care. As the financial changes and their implications take effect, we will see something akin to a game of musical chairs, with not nearly enough chairs for all."

"Give or take a few years, my message is that 1983 or 1984 is likely to be the year the music stopped."

Alain C. Enthoven, Ph.D., "The Year The Music Stopped," Address before the American Academy of Orthopedic Surgeons, Anaheim, California, 1983

MINNEAPOLIS — Senator Durenberger, fellow speakers, fellow reporters, fellow editors, and other members of the Minnesota Newspaper Foundation. Before I plunge into the subject matter — the economic struggle of independent medical practitioners with the rise of efficient organized systems of care — I have a confession to make.

As a cautious conservative, a writing editor, and a practicing pathologist, I am uneasy about addressing members of the news media. The words of the patron saint of modern medicine, Sir William Osler, ring in my ears: "In the life of every successful physician there comes the temptation to toy with the Delilah of the press — daily and otherwise. Sooner or later she is sure to play the harlot and has left many a man shorn of his strength, vi z., the confidence of his professional brethren."¹

But my uneasiness represents more than historical guilt.

• We conservative physicians often have a love-hate relationship with the media. We need you to educate the public, but fear your liberal leanings will distort our message. We particularly dread edited interviews, because too often your message comes through and not ours. Our most scientific thoughts, it seems, remain on the cutting room floor. You may wonder why we tend to be conservative. I suspect these are the reasons: (1) our

¹Presented in part before the Minnesota Newspaper Foundation, Issues Conference on Health Care Financing and Delivery, July 26, 1984.

incomes and tax exposure make us that way; (2) we have seen close up — in our training, in the armed services, and in the federal bureaucracy — that the government, given the best of intentions — never achieves more than competent mediocrity in delivering medical care; and (3) nothing brings us so close to reality as being a physician (a conservative, after all, is nothing more than a liberal who has been mugged by reality).

- As a writing editor, I respect you as fellow connoisseurs of the written word. I have shared the pressures imposed by deadlines and by demands of clarity, accuracy, and brevity. As Red Smith, the late sports writer, said: "Writing is easy. You just sit there until beads of blood break out on your forehead."

Or, as E.B. White said in his *ELEMENTS OF STYLE*: "Writing is, for most, laborious and slow. The mind travels faster than the pen; consequently, writing becomes a question of learning to make occasional wing shots, to bring down the bird of thought as it flashes by. A writer is a gunner, sometimes waiting in his blind for something to come in, sometimes roaming the countryside hoping to scare something up."²

- This E.B. White metaphor brings me to the pathologist part. Perhaps you will recall a May 15 *WALL STREET JOURNAL* piece about specialist jokes among physicians. Let me cite a variation of one of those jokes to teach you certain truths about pathologists.

Four doctors — a general practitioner, an internist, a surgeon, and a pathologist — are in a duck blind.

A bird appears on the horizon. The general practitioner leaps to his feet and shouts: "It looks like a duck; it flies like a duck, and I'm going to call it a duck." He fires and misses.

A second bird appears. The internist solemnly rises for the occasion and says: "It looks like a duck and flies like a duck, but I must rule out an ostrich, a golden eagle, a whooping crane, and all other endangered species." By the time he ends his spiel, the bird is gone.

A third bird appears. The surgeon jumps to his feet, aims, fires, and watches the bird drop at his feet. He turns to the pathologist and says: "See if that's a duck."

Later, as they drive home together, the surgeon spots a large flock of sheep out the car window and says to the pathologist: "My God, those sheep have just been shorn." The pathologist replies: "At least on the side we can see."

And so, as a pathologist, I like to be dead certain about what I say, at least on the side I can see; as a conservative, I prefer competitive market forces to government regulation; and as a writing editor, I am going to roam around the medical countryside, hoping to scare something up for you.

Nature of Conference

We're here, speakers and audience alike, to address what is happening to the health care system. For at least the last three years, all sectors of society — the public, Congress, business, and third party payers — have been striving to cut back or "contain" health care costs. This concerted effort is working. The rate of medical cost increases, peaked in 1982 at 11.6 percent. It's now been impressively restrained to 6.3 percent, causing the Reagan Administration to claim it has "broken the back of the Health Care Inflation Monster." Yet, Medicare still faces bankruptcy by 1990. However you read these events, one thing is certain. The open-ended era of federal largesse is over. The "rationing," or "management" of health care by large organizations, with government support and approval and encouragement, is here and probably represents an inevitable trend.

Setting the Tone

Just a few more introductory thoughts, if I may, to set the tone. As I indicated in a series of editorials last year, medical care is in a watershed period. We are undergoing what I call the *Corporate Transformation of Medicine*. For the fee-for-service sector, this is a unsettling time because we are losing the battle for control of health care. In a

competitive environment, corporations — with access to capital, management skills, and ability to market their product — hold the winning cards. In the Twin Cities, at least, independent solo practice and small group practices are becoming increasingly marginal. The Twin Cities now has 710,000 of its two million citizens in prepaid plans. For the independent practitioner without any affiliation with a plan, this means nearly $\frac{3}{4}$ million people have left town.

The current transformation is the third great transformation of medicine. The first was the *scientific transformation*. This began about 1900 and stretches to today. This transformation included such advances as intravenous fluid therapy, antibiotics, Xrays, aseptic surgery, vaccines, genetic research, and, more recently, such technologies as coronary bypass surgery, renal dialysis, hip prostheses, CAT scanners, and nuclear magnetic resonance devices.

Second was the *social activism transformation*, starting about 1945. This transformation included Hill-Burton funds for building hospitals, expansion of the number of medical schools from 84 to 142, insurance coverage of about 90 percent of Americans, the government decision in 1954 to make health care costs deductible, Medicare and Medicaid, and, of course, the government subsidizing of more medical graduates. In 1965 we graduated 7400 new doctors each year. This year we will have 17,000 graduates. I must mention one other factor. In the open-ended era — health care became a god-given and government-given right.

The *third transformation* — the *industrialization of medicine* — is occurring now with great speed right under our noses. This industrialization is bringing about profound structural changes, with the integration, consolidation, and diversification of people and resources into ever larger groups. Because of previously unrestrained open-ended health care inflation, lasting from 1960 to 1982, the inevitability of this latest transformation ought to have been predictable.

In any event, the corporation transformation of medicine is fundamental, historic, permanent, and irreversible (unless the government converts health care more into a huge public utility, a possibility with a Mondale election). The transformation will probably take about ten years to complete. Its effect will be to form organizations to achieve more economies, greater efficiencies, more strategic marketing, and a true integration of marketing and management resources. Instead of the traditional provider-driven systems — with control by physicians, hospitals, and insurance companies — the new systems will become increasingly consumer-driven, with an emphasis of price, access, and accountability to the marketplace.

Struggle by Independent Physicians

The economic prospects of independent doctors have changed for the worse. New physicians, and even established ones, are struggling to start and keep practices, to achieve career satisfactions, to pay back their education debts, and to generate adequate income to sustain their life style and to make their practices grow. Independent physicians are seeing fewer patients, experiencing an increasing cost of doing business, and are not receiving full payment for their services. To maintain their patient base, they are being forced to discount their fees for their own independent practice association, for any PPO they might join, and for all welfare patients. Further, powerful HMOs — MedCenter, Group Health, SHARE, Physicians Health Plan, HMO Minnesota — with plenty of marketing research and marketing clout behind them, are making a final push to sew up most of the Medicare market. According to Susan Charles, vice president for marketing and sales at SHARE, Twin City HMOs, will raise their advertising by seven to 10 fold in 1984.³ These HMOs already have at least 20 percent of the Seniors' Market and may have nearly 50 percent of it within two years.

When you realize Medicare patients make up 26 percent of office visits and 31 percent

of hospital visits of Minnesota physicians, you can begin to appreciate the adverse economic impact on independent practitioners of this concerted HMO push for Senior market share. All these factors — fewer patients, increased cost of doing business, discounted fees, less use of hospitals, successful HMO marketing, and now the voluntary fee freeze by physicians — are contributing to lower incomes. Throw in the government freezing of Medicare fees, and the government threat to impose fixed prospective physician fees for the 468 Diagnosis Related Groups, and it's no wonder physicians are economically threatened.

Theodore Fredrickson, a marketing consultant at the Minnesota Medical Association, has said one of three Minnesota physicians' incomes will drop 25 percent this year. In surveying various sources around the Twin Cities, I was recently quoted in CITY BUSINESS as saying starting incomes for physicians are in the \$25,000 to \$45,000 range. That was a telephone interview and an off-the-cuff remark. I have since surveyed a dozen or so people around the cities and find the range is closer to \$30,000 to \$65,000 for fully-employed physicians, depending on experience, credentials, and specialty. Seasoned specialists who are joining prepaid plans may command incomes of \$100,000 or more.

According to the latest figures of the AMA, the average physicians' net earnings are \$99,500. In a study of Minnesota doctors published in 1983, the Minnesota Medical Association found 27 percent of all doctors made less than \$60,000, 26 percent from \$60,000 to \$80,000, 24 percent from \$80,000 to \$100,000, and 24 percent over \$100,000.⁴ If Fredrickson's figures are right, incomes have come down significantly since 1982 for one out of three Minnesota doctors. Indeed, given the economic forces at work, many independent practices may be in serious jeopardy. Like the rest of society, physicians now have the right to fail.

Let's look at it another way. As the number of physicians has grown (about 40 percent in the last ten years), physician's real income has declined (the latest income figures from the AMA's Socioeconomic Monitoring System report 'a 3.0 percent drop in income in the 1st half of 1983).⁵ Based on 1970 dollars, real income has gone from \$42,000 in 1970 to \$38,000 in 1983, with a steady erosion of buying power since 1972. Other factors are contributing to economic decline: (1) patient visits to doctors' offices have dropped 20 percent in the last eight years (including an 8.0 percent drop in the second half of 1983),⁵ (2) only 53 percent of doctors now say they are working up to capacity; (3) in the Twin Cities, HMOs, which now have 36 percent market share, are gaining one percent of the market each month; (4) patient lists of the Twin Cities' are dwindling, with an average of about 450 patients per independent physician in the Twin Cities versus about 600 per doctor for the nation as a whole; (5) these patients lists of independent physicians in the Twin Cities will continue to decline as HMOs grow, for large Twin Cities HMOs — SHARE, Group Health, and Med Center — have roughly 900 patients per doctor; (6) the number of physicians continues to escalate (in 1970, there were 334,000 in the United States; in 1980, 468,000; in 1990, 536,000 are predicted; and in 2000, 643,000 are expected); and (7) medical school debts of young doctors are reaching such proportions that medicine will soon become an unattractive career. Doctor John Sandson of Boston University School of Medicine has estimated that by the 1987-1988 academic year, as many as 10,000 medical students will have debts of \$40,000 to \$80,000.⁶ Repayment schedules, at 15 percent over 25 years, would amount to \$16,000 to \$32,000 a year. Assuming a starting income of \$100,000 a year, which in my opinion is unlikely, new physicians will require 20 to 45 percent of their income just to retire their debt.

Minnesota Physicians' Perceptions

The picture I have just painted is not a pretty one if you are an independent Minnesota physician — a fast disappearing species.* No longer do the old verities — ability,

*Of the roughly 4,100 physicians in the Twin Cities, an estimated 2,500 are already affiliated with PHP, 110 with SHARE, 1,400 with HMO Minnesota, 250 with Coordinated Health Care, 260 with MedCenter, and 190 with Group Health. Because many physicians belong to more than one organization, the numbers add up to more than 4,100. Nonetheless, these figures make the point that most Twin Cities physicians are aligned in one way or another to existing health care organizations.

availability, and affability — seem to count. What counts now are: (1) the organization you belong to; (2) the cost it takes for the patient to go to you; (3) the ability of your organization to deliver primary care; and (4) the ability of your organization to carry on simultaneously the businesses of providing insurance, marketing and delivering medical care.⁷

How do the physicians of Minnesota perceive all of this? I am going to cite for you conclusions of the Minnesota Medical Association published in February 1983 under the title "Medical Practice in Minnesota: Physician Perceptions of Medical Manpower, Competition and Other Public Policy Issues in 1982."

- *First*, Minnesota physicians differed from their national colleagues — two-thirds practiced in groups, versus one-fourth nationally, and only one-half felt that HMOs practiced lower quality of care, compared to two-thirds of the nation's physicians who held that view.

- *Second*, four of five Minnesota doctors thought there were too many physicians; more than 80 percent felt a new physician would have a tough time establishing a practice; and less than half thought they would have a hard time recruiting a new physician.

- *Third*, in 1982, about three-fourths were seeing the same number of patients as five years before, but hospital visits were down; waiting times to see patients had declined slightly; and three-fourths thought patient volume would remain the same for the next two years.

- *Fourth*, physicians were positioning themselves to compete — by increasing the number of physicians in their practices, by opening satellite offices, by acquiring major equipment, by extending office hours, and by making house calls. (These kinds of activities may have led to the closing of two Flashner Urgicenters in the Twin Cities in July 1984).

- *And fifth*, more than half indicated their patients were more sensitive to price; paradoxically, 60 to 70 percent reported patients demanding more services — more procedures to be done as outpatients, demanding to see more specialists, and requesting more tests.

As I look at these 1982 figures, I appreciate how fast events are moving. Now practically nobody is entering solo practice; small groups of primary physicians are not adding physicians or are being absorbed by larger groups; patient office visits have dropped by as much as 20 percent; hospital utilization in 1984 is down by 15 percent or more; and independent physicians are grumbling more and more about their inability to market or counter market forces. PPO enrollment is growing, but as yet has not had much market impact.

Meanwhile multispecialty and primary care groups, medium sized groups affiliated with HMOs, and HMOs themselves, continue their brisk growth. Organized clinics in intermediate sized and small cities — Mankato, Albert Lea, Duluth, Willmar, and Detroit Lakes — are growing. In the Cities, the Park-Nicollet Clinic added 30 physicians last year and may add 14 or 15 more this coming year; Group Health placed 31 more physicians on their staff in the first six months of 1984 and may add 20 or 25 more next year; SHARE Health Care Associates has gone from 44 to 55 in 1984, has five satellites staffed by SHARE physicians, and has 23 affiliated medical groups; and the Columbia Park Clinic, which has an affiliation with SHARE, now has 44 physicians and will be adding six more to its staff.

This has been a sketchy review of the current medical manpower situation. But the evidence gathered from my talks with medical association officers, multispecialty clinic physicians, and HMO officials is clear enough — independent practices are shrinking, and organized groups are growing.

My message is not wholly negative. Those physicians who have adapted to change and who have chosen health care organizations they feel compatible with are often happy with them. And why not? After all, their patients lists — often both HMO and fee-for-service

— are now growing. These physicians say strong central management is an asset, not only for patient marketing and satisfaction, but for the physician's economic well-being.

The Flip Side

Every social change has its flip side. The perceived doctor surplus is no exception.

- Pro-competition advocates, such as Senator Durenberger, see the surplus as a catalyst, to speed up the transformation to competitive medicine. Recruiters in organized groups will now have a choice of the cream of the crop of physicians going into practice, and patients will have a choice of systems — independent practice associations, preferred provider organizations, preferred plans, multispecialty fee-for-service groups with their own insurance, or HMOs. As one HMO vice-president put it to me: "The cost of medical care has reached the pain threshold. People are now making choices to switch systems, and specialists are also choosing to switch methods of payment."

- Young physicians, for reasons of economic self-interest rather than altruism, are diffusing into the countryside to fill the vacuum in doctor-short regions of the United States. When the physician supply grew 40 percent in the 1970s, medical and surgical specialists migrated to smaller towns.⁸ By 1979, nearly every community of 2500 or more in the United States had access to a physician, and nearly every community of 25,000 or more had board-certified specialists in medicine, surgery, pediatrics, and obstetrics and gynecology. Three years ago, 75 percent of Arkansas' counties said they were short of doctors. Today only 25 percent do. Of Minnesota's 87 counties, 22 or 25 percent, are said to be "medically underserved" by federal definition. But in Minnesota many physicians in adjacent counties, who are supplying medical services for those "underserved" counties and opening satellite clinics, dispute this federal definition. Indeed, it has been said that over 99 percent of Minnesota's residents are within 20 miles of a physician or hospital. Currently, 900 counties in the United States are "doctor-short," i.e. have more than 3500 people per physician. By 1994, the number of "doctor-short" counties is expected to drop by nearly 60 percent.⁹

- Proponents of increased physician supply say increased competition will benefit patients by providing better access, more services, lower costs, and more personnel attention as doctors try to attract and hold patients. According to the AMA, last year eight percent of doctors increased house calls, five percent scheduled more office hours, 22 percent hired more non-physician employees to increase efficiency, and 40 percent adopted marketing techniques.⁹

- The surplus of doctors, many of whom are willing to work part-time or for salaries, is fueling the transformation to alternative forms of delivery — urgicenters, ambulatory surgery units, pre-hospital diagnostic centers, after-care convalescent centers, outpatient alcoholic treatment centers, geriatric outpatient day care units, shopping center outlets, doctor supervised diet and exercise centers, and home health treatment squads. Consumers — who are becoming increasingly independent, likely to shop, and are cost and value conscious — will add momentum to this movement towards a more diversified and pluralistic system. Health care corporations, through strategic marketing research and application, will further push the movement.

Conclusions

In closing, I believe the corporate transformation of medicine is historic, fundamental, inevitable, and permanent (barring massive federal intervention). Like many physicians, I am not happy with all of these events — the doctor surplus, the organizational transformation, and loss of physician autonomy and control. But because of my background in fee-for-service medicine, I resist the managers' and economists' reasoning that justify these events, viz. that fee-for-service medicine invites pervasive perverse incentives that inevitably corrupt clinical decision making, that medical care must be redefined as an economic product rather than a social good to contain costs, and physicians should

function as salaried functionaries of the organization rather than as independent professionals, and that the competitive model will solve most health care problems of American society.

But something has to change. The cost of health care has reached the point where it hurts. It has exceeded the economic pain threshold. It hurts enough that society, at least Minnesota society, is now in the final stages of intellectually reassessing the way it pays for health care: representatives of government, businesses, third parties, and consumers are in the mood to seek alternative delivery systems and to act upon them. And it hurts enough that health care corporations have found consumers are now remarkably receptive to modern marketing techniques.

This mood has set in motion a set of interacting actions by various sectors of society that are reforming the way of paying for the health care system and restraining the freedom of action of independent practitioners. In the Twin Cities, these changes seem relentlessly progressive. When these changes interfere with our right to treat the sick, to educate the novice, to share medical knowledge, or to deny services, we should object. Otherwise we will have to accommodate and adjust.

I'm afraid our choice as professionals is narrowing down to deciding to what organizations to belong. In making this choice, one does not necessarily have to change one's life completely — give up one's offices and one's patients. The choice may come down to what organization offers the best blend of HMO, PPO, and fee-for-service patients. In his recent article "The Twin Cities' Medical Marketplace," John Iglehart, in talking about physicians' experience with the current Twin Cities' HMOs, puts it this way:

"How have these six plans lured patients away from fee-for-service medical care into organizations that provide a range of health-care services in return for a fixed, prearranged price? There are a variety of answers to these questions, but it is important to bear in mind that in more than a few instances, patients were not abandoning their own doctors for HMO physicians but rather were changing the basis on which a third party remunerated their providers, because most physicians in some of these plans accept patients on the basis of either prepayment or fee-for-service."

I would estimate 90 percent of the physicians of the Twin Cities have an affiliation with a prepaid or preferred provider organization, and the remaining 10 percent are becoming increasingly marginal. I believe we should become involved in these organizations and lead them so we can shape them to commit them to quality, participate in their management, define their cost containment policies, and create innovations to strengthen them.

Finally, as a cautious physician of the old school, I am wary of Senator Durenberger's idea of using Medicare as a club to bring about comprehensive reform of the present system. As I understand his thinking, he envisions extending the prepaid HMO concept to Medicare and Medicaid patients and DRGs to physicians' offices and other outpatient services.

Once you have applied HMOs and DRGs to all government subsidized inpatients and outpatients, you have set up four probable outcomes: (1) competition between prepaid groups as the sole method of delivering care; (2) capitation as the only remaining logical mechanism of payment; (3) fundamental reform of the system of delivering health care by eliminating fee-for-service payments; and (4) contractual arrangements whereby health care contracts flow inevitably to the lowest bidding organization, with proper lip service being given, of course, to "quality." The proposition that higher quality necessarily follows if you transfer care from individual physicians or small groups of physicians to large organized groups who bid lower strikes me as the work of someone who has taken the Oath of Hypocrisy.

Say what you will about the perverse economic incentives of fee-for-service, but don't forget its virtues: (1) it recognizes the high level of uncertainty and choice in diagnosing, treating, and caring for patients; (2) it makes possible individuality, personal interaction,

EDITOR'S NOTEBOOK

and confidentiality between patient and doctor; (3) it permits the doctor to promote for the patient's welfare in an increasingly economizing and dehumanizing environment. These virtues must be preserved and protected as we enter the new era of organizational medicine.

Richard L. Reese MD

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Cover Photograph

“A Covering of Pine Needles”

Dr. Thomas A. Ala's covers have graced the covers of MINNESOTA MEDICINE several times. This month's "A Covering of Pine Needles" is a memory of a week-end walk Dr. Ala and his family enjoyed in Interstate State Park in the autumn of 1982. They were on a path along the St. Croix River just South of the U.S.-8 bridge.

A Nikon camera with 55 mm lens and 85-C filter, F5.6 1/8 second exposure with Kodachrome 64 film was used by Dr. Ala.

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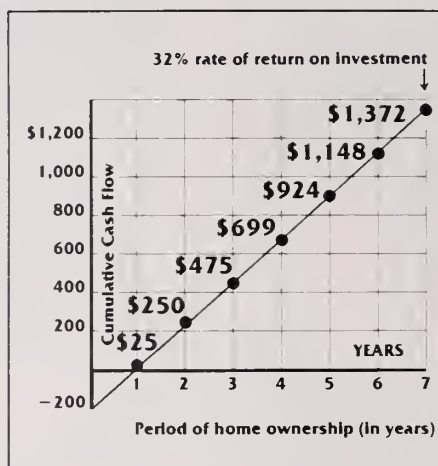
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Cytoreduction Surgery for Metastatic Glucagonoma

A Clinicopathologic Study with Special Reference to the Utility of Immunocytochemistry and Ultrastructure in Diagnosis

DAVID L. RADER, M.D.*; J. KIRK MARTIN, JR., M.D.† and BERND W. SCHEITHAUER, M.D.‡

The clinicopathologic features of a case of surgically resected, glucagon-producing pancreatic islet cell carcinoma are presented. The case is of interest because, despite clinical and ultrastructural features characteristic of glucagonoma, the poorly granulated tumor was immunocytochemically negative for glucagon. The therapy of metastatic glucagonoma is discussed, and the literature is reviewed.

A 54-YEAR-OLD male railroad inspector was referred to the Mayo Clinic in September 1982 for evaluation of anemia and splenomegaly. Except for mild early satiety, he was entirely asymptomatic, specifically denying having fever, chills, night sweats, weight loss, skin rash, polyuria, polydipsia, and abdominal pain. There was no history of alcohol abuse, malaria, foreign travel, or trauma.

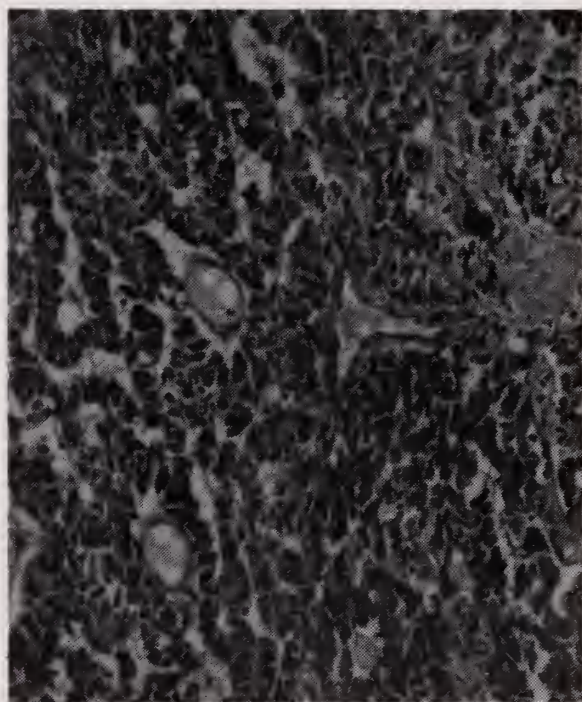
Results of physical examination were unremarkable aside from a smooth, nontender, firm, mobile mass in the left upper quadrant. The mass extended 17 cm below the costal margin. The skin was normal. The liver was not palpable. No lymphadenopathy was evident.

Laboratory studies revealed a hemoglobin concentration of 11.6 g/dl and a leukocyte count of 8,000/mm³, with 63% neutrophils, 25% lymphocytes, and 11% monocytes. The platelet count was 370,000/mm³. Blood values for sodium, calcium, phosphorus, total protein, alkaline phosphatase, aspartate aminotransferase, bilirubin, and creatinine were normal. The serum potassium level was 5.5 meq/liter. A fasting serum glucose concentration was 124 mg/dl. The Westergren sedimentation rate was 75 mm in 1 hr. Routine urinalysis showed 2+ proteinuria.

Results of proctoscopic evaluation and stool examination for occult blood were negative. Chest and abdominal roentgenograms were normal. Barium enema and excretory urograms showed a mass effect in the left upper quadrant consistent with splenomegaly; however, a radioisotope scan of the liver and spleen

revealed a normal liver and extrinsic compression of an otherwise normal spleen. A computed tomography scan of the abdomen showed an enormous, largely solid left upper quadrant mass intimately associated with the tail of the pancreas, the posterior wall of the stomach, and the spleen. Low-density areas in the liver were consistent with metastases. The specimen from an ultrasound-directed needle biopsy contained neoplastic cells with morphologic features of islet cell tumor of the pancreas.

Serum gastrin and urinary 5-hydroxyindoleacetic acid levels were 120 pg/ml (normal, <300 pg/ml) and



Legends

Fig. 1 — Photomicrograph of malignant islet cell tumor. Monomorphous cells are disposed in cords, ribbons, and clusters within delicate fibrovascular stroma. (Hematoxylin and eosin, x590.)

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4.8 mg in 24 hr (normal <6 mg in 24 hr), respectively. The plasma glucagon level was 693 pg/ml (normal, <200 pg/ml).

Surgical consultation was obtained, and exploration was recommended. At operation, the tumor arising from the tail of the pancreas was found to be adherent to the spleen and splenic flexure of the colon. The proximal portion of the pancreas appeared normal, and the stomach was uninvolved. The liver contained multiple small metastases in both lobes. A distal pancreatectomy was performed, including en bloc splenectomy and resection of the involved colon.

The patient did well postoperatively. His serum glucose value remained high, but he did not require insulin or oral hypoglycemic agents. Serial plasma glucagon levels one and three weeks after the operation were 475 pg/ml and 389 pg/ml, representing 31% and 44% reductions, respectively, from preoperative values.

Two months after the operation, a diffuse rash developed on the trunk and lower extremities. Although skin biopsies and photographs could not be obtained, the rash had the classic appearance of necrolytic migratory erythema. The serum glucagon level at that time was 408 pg/ml.

Pathology

The solitary oval tumor, which was 25 by 20 by 20 cm and weighed 4,450 g, totally replaced the pancreatic tail and body. It was delimited by a delicate connective tissue capsule. Cut sections showed multifocal hemorrhage and necrosis. The splenic flexure of the colon and the spleen were attached by firm fibrous adhesions.

Microsections stained with hematoxylin and eosin showed the tumor to be composed of a uniform population of polygonal cells disposed in cords, ribbons, and clusters. The round-to-oval nuclei had a delicate chromatin pattern and inconspicuous nucleoli. Nuclear atypia was not evident, although normally formed mitotic figures were found (one per 10 high-power fields). Neither capsular nor vascular invasion was identified. Utilizing the peroxidase-antiperoxidase technique of Sternberger¹ with commercially available antisera (Immulok, Carpinteria, CA), immunostains for insulin, glucagon, gastrin, and somatostatin were uniformly negative. Despite pepsin predigestion, immunoreactivity for glucagon could not be identified. Normal pancreas served as positive controls, whereas replacement of the primary antiserum with normal rabbit serum served as negative controls. Both reacted appropriately.

Multiple tissue fragments obtained at surgery were

immersed in Trump's fixative (1% glutaraldehyde, 3% formalin), diced into 1-mm cubes, and routinely processed for electron microscopy. The tumor cells possessed round-to-elongated nuclei, delicately dispersed chromatin, and small nucleoli. The cytoplasm was moderate in quantity and contained well-developed Golgi complexes and small stacks of rough endoplasmic reticulum. Mitochondria varied in number, but oncocytic transformation was not observed (Figure 1). Somewhat variably electron-dense secretory granules were randomly distributed within the cytoplasm in very small numbers. They were 80 to 230 nm (mean, 150 nm) in diameter and were separated from their membranes by an electron-lucent halo. Most of the granule cores were of uniform electron density, although many others had the characteristic ultrastructural features of alpha cell granules. Such granules showed the presence, within the matrix of the granule, of an additional electron-dense central or eccentrically located spherical core (Figure 2, see inset). Granule cores with crystalline structure were not observed. Lysosomes were present in small numbers, as were scant desmosomal junctions (Figure 2).

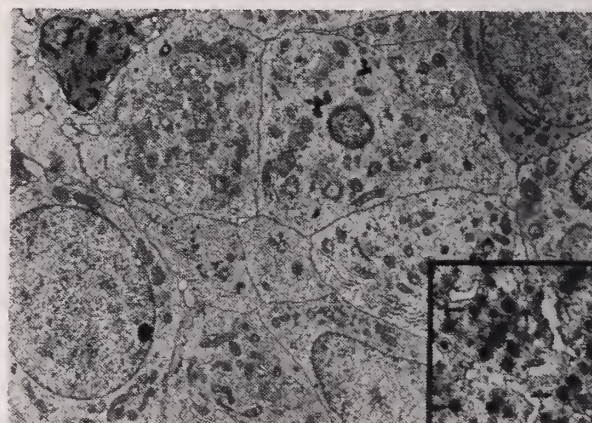


Fig. 2 — Electron photomicrograph shows characteristic ultrastructural features of proteohormone-producing cells. Note well-developed rough endoplasmic reticulum and Golgi complexes and scattered electron-dense secretory granules. (x1,590.) Inset, Well-formed and somewhat variably electron-dense membrane-bound secretory granules. Note presence of an additional eccentric core (arrows), a characteristic of glucagon granules. (x5,900.)

Discussion

Since McGavran and associates² first documented a glucagon-secreting islet cell carcinoma of the pancreas in 1966, fewer than 100 such cases have been described. Of particular interest is the distinct clinical syndrome often associated with these rare tumors. The glucagonoma syndrome, although not invariably present,^{3,4} consists of diabetes, necrolytic migratory erythema, weight loss, and venous thrombosis. Frequent laboratory findings include anemia, hypo-

proteinemia, hypocholesterolemia, and hypoa-aminoacidemia.⁴ Our patient had subclinical diabetes and a normochromic, normocytic anemia but lacked the other distinguishing features of the syndrome. Interestingly, the development of the skin rash occurred after the debulking of the primary tumor.

Most such tumors, as in this case, are located in the body and tail of the pancreas. Size varies, but most are greater than 3 cm. Metastasis is quite common. In one collected review,⁵ 64% of patients with glucagonomas had metastases at the time of diagnosis. The most frequent sites of metastatic involvement are lymph nodes and the liver, although adrenal⁶ and bone⁷ metastases have been reported.

Inappropriate secretion of glucagon is implicated in the development of the glucagonoma syndrome. In normal subjects, fasting plasma immunoreactive glucagon (IRG) levels seldom exceed 200 pg/ml, whereas in patients with glucagonomas, IRG levels range from 315 to 96,000 pg/ml, and 30% are between 1,000 and 2,000 pg/ml.^{4,5} Our patient had plasma glucagon levels below the usual range. The magnitude of plasma glucagon elevation, however, is not directly related to the severity of symptoms. Patients with relatively low IRG levels (700 pg/ml) may have extensive skin manifestations,⁸ and others with high levels of IRG (7,200 pg/ml) may have no lesions at all.⁹ The anemia is also variable and unrelated to plasma glucagon levels.

The pathologic features of the tumor of our patient are of particular interest because they illustrate the difficulty one faces in establishing the nature of an islet cell tumor by purely light microscopic methods. Although immunocytochemistry has revolutionized surgical and endocrine pathology by permitting the specific identification of secretory products and thus the development of a functional classification of hormone-producing neoplasms, the technique depends on the presence within the cytoplasm of significant quantities of the product in question. It is now well known that a negative immunoreaction does not exclude the presence of a specific antigen. Indeed, immunocytochemistry at an ultrastructural level may be required to confirm a functional diagnosis.¹⁰ Fortunately, as in this instance, clinical and biochemical evidence may help direct further studies. The identification of characteristic alpha cell granules in our case permits pathologic classification of this islet cell tumor as a glucagonoma.^{11,12} The absence of reactivity in routine immunostains for glucagon is readily ex-

plained by the sparsity of secretory granules observed on electron microscopy. The relatively modest serum levels of glucagon by such a large tumor may reflect a low level of glucagon production per cell. Alternatively, many cells in such a large tumor may be functionally uncommitted and not engaged in hormone synthesis.

In our patient, the mass effect of the tumor alone necessitated resection, but surgical debulking of metastatic islet cell carcinomas has been associated with improvement or temporary reversal of symptoms. Murray and associates¹³ (1978) reported complete remission of hypoglycemia after partial resection of a metastatic insulinoma. In 1981, Prinz and co-workers⁴ described two patients with metastatic glucagonomas in whom "cytoreductive surgery" resulted in clinical improvement. One asymptomatic patient had a dramatic decrease in plasma glucagon levels, and the other had complete remission of symptoms for two years. Thompson,⁴ in the discussion of that same article, told about a patient who underwent surgical debulking for metastatic glucagonoma and had nearly complete resolution of the associated skin rash within 48 hours after surgery. Significant improvement after surgical debulking of metastatic glucagonomas may continue for prolonged periods after surgery. During 15 months of follow-up, one patient gained weight and the rash completely resolved except for occasional mild recurrences. Serum glucose levels remained elevated but did not require insulin or oral hypoglycemic agents. Plasma IRG levels decreased significantly after surgery but remained high. No chemotherapy was administered.¹⁴

These isolated cases and others^{2,15-18} indicate that removal of the primary tumor, despite hepatic metastasis, is of benefit to the patient with or without the glucagonoma syndrome. Any skin rash rapidly resolves, the anemia disappears, and the patient's weight returns to normal.⁵ In all cases, potential problems related to the mass effect of the tumor are alleviated. As with most islet cell carcinomas, glucagonomas are slow-growing. Mean overall survival approaches seven years.⁵ Even with documented metastases, postoperative survival may exceed 5 years. Whether surgical debulking with or without chemotherapy improves survival remains unclear.

Acknowledgment

The authors express their appreciation to Drs. Kalman Kovacs and Eva Horvath of St. Michael's Hospital, Toronto, Ontario, Canada, for assistance with the immunocytochemistry and ultrastructural assessment of the tumor and to Dr. J. Aidan Carney for critical review of the manuscript.

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Classification of the Acute Leukemias*

ROBERT W. MCKENNA, M.D.†

The FAB classification of acute leukemia is the most widely used. There are three FAB classes of ALL and six of AML. The various classes are distinguished on the basis of cytologic and cytochemical criteria.

THE MOST WIDELY USED morphologic classification of the acute leukemias is that proposed by the French-American-British (FAB) Cooperative Group. The FAB classification separates the acute leukemias into three classes of acute lymphoblastic leukemia and six classes of acute myelogenous leukemia. The separation of the various classes is based on the morphologic appearance of the neoplastic cells in the Romanowsky stained smears and on the cytochemical characteristics of the cells.

Acute Lymphoblastic Leukemia

The large majority of the lymphoblastic leukemias are composed of varying proportions of two major cell types, lymphoblasts and prolymphocytes. The prolymphocyte designation is given to cells in the morphologic spectrum intermediate to lymphoblasts and mature appearing lymphocytes. The three FAB

morphologic classes, L₁, L₂ and L₃, are defined according to the occurrence of individual cytologic features among the leukemic cell population.^{1,2} These features are described in Table 1.

In the FAB-L₁ lymphoblastic leukemia the majority of the leukemic cells in the blood and bone marrow are small cells with little or no recognizable cytoplasm and absent or inconspicuous nucleoli. The nuclear chromatin pattern is usually homogeneous. There may be nuclear indentations or clefting. The majority of the cells in any case are prolymphocytes. Lymphoblasts are usually present but comprise a minority cell population. The leukemic cells in L₁ are always negative for myeloperoxidase, Sudan black B and chloroacetate esterase. They are PAS positive in approximately 75 percent of cases. The distribution of the PAS stain is coarsely granular or globular in the cytoplasm. The blood leukocyte count is most commonly less than $20 \times 10^9/L$ but occasionally may exceed $50 \times 10^9/L$. The bone marrow is markedly hypercellular with extensive replacement by leukemic cells.

TABLE 1

FAB Classification of Lymphoblastic Leukemia¹

Cytologic Features	L ₁	L ₂	L ₃
*Cell Size	small cells predominate	large, heterogeneous in size	large and homogeneous
*Amount of Cytoplasm	scanty	variable, often moderately abundant	moderately abundant
*Nucleoli	not visible, or small and inconspicuous	one or more present, often large	prominent; one or more vesicular prominent
Nuclear Chromatin	homogeneous in any one case	variable, heterogeneous in any one case	finely stippled and homogeneous
Nuclear Shape	regular, occasional clefting or indentation	irregular; clefting and indentation common	regular-oval to round
Basophilia of Cytoplasm	slight or moderate rarely intense	variable; deep in some	very deep
Cytoplasmic Vacuoles	variable	variable	often prominent

*These cytologic features appear to be most useful in separating L₁ from L₂ lymphoblastic leukemia.

In FAB-L₂ lymphoblastic leukemia, the majority of the leukemic cells are larger than in L₁. They have a moderately abundant cytoplasm and nucleoli are often prominent in most of the leukemic cells. The nuclear chromatin pattern may be heterogeneous and clefting or nuclear indentation may be present. The majority of the cells in any case are lymphoblasts. Pro-lymphocytes may be present but are a minority cell population. Myeloperoxidase, Sudan black B and chloroacetate esterase stains are negative and the PAS stain is often positive. The blood leukocyte count is more commonly elevated above $20 \times 10^9/L$ than in L₁ and may be markedly elevated. The bone marrow is usually markedly hypercellular with extensive leukemic replacement. L₂ often requires differentiation from myeloblastic leukemia without maturation (M₁) and occasionally from poorly differentiated monocytic leukemia (M₅) or primitive acute megakaryoblastic leukemias. The myeloperoxidase and non-specific esterase reactions are important in differentiating L₂ from M₁ and M₅. The rare primitive megakaryoblastic leukemias may not be distinguishable from L₂ lymphoblastic leukemia by either morphology or routine cytochemistry; ultra-structural cytochemical studies for platelet peroxidase are frequently necessary to identify these megakaryoblastic leukemias.

FAB-L₃ (Burkitt type) lymphoblastic leukemia is characterized by a proliferation of morphologically distinct and uniform large cells. Their cytoplasm is deeply basophilic and usually contains a large number of sharply punched out vacuoles. The contents of these vacuoles stain with Oil red O. The nuclear chromatin is more coarse than that of the lymphoblast. The nuclear outline is round or oval and rarely clefted or indented. The peroxidase, Sudan black B, chloroacetate esterase and PAS stains are negative. The cytoplasm stains intensely with methyl green pyronin (MGP). The bone marrow may be partially or completely replaced by neoplastic cells. The blood leukocyte count is normal or mildly elevated with a low percentage of leukemic cells. This variety of leukemia is frequently associated with an abdominal tumor mass, often in the ileocecal region.

Of these three morphologic varieties of lymphoblastic leukemic, FAB-L₁ is the most common (65%-85%).^{3,4} The majority of childhood lymphoblastic leukemia are L₁, as are more than half of the adult cases. FAB-L₂ accounts for a minority of childhood lymphoblastic leukemias but is more frequent in adults. FAB-L₃ accounts for a small percentage of lymphoblastic leukemias (<3%), is usually seen in children or young adults and in almost

all cases represents an early leukemic manifestation of small non-cleaved follicular center cell lymphoma.

Miller *et al.*,⁴ reporting on the experience of the Children's Cancer Study Group defined three prognostic groups of lymphoblastic leukemia based upon the initial blood leukocyte count and age at diagnosis.

Prognostic Groups of Childhood ALL (N=759) ⁴	
Good Prognosis (21.2%)	- WBC < $10 \times 10^9/L$ 3-7 years of age
Average Prognosis (60.3%)	- WBC < $10 \times 10^9/L$ <3 or >7 years or age or WBC $10-50 \times 10^9/L$ any age
Poor Prognosis (18.4%)	- WBC > $50 \times 10^9/L$

Correcting for these clinical prognostic features it was demonstrated that FAB morphologic class was significantly related to induction of complete remission, duration of complete remission and survival.⁴

FAB Morphologic Class of ALL Related to Prognosis ⁴		
Induction of complete remission	L ₁ -95% L ₂ -85%	(p = .009)
Duration of complete remission	Rate of relapse L ₂ >L ₁	(p = .0001)
Survival	L ₁ >L ₂	(p = .01)
	For all clinical prognostic groups	

To date, the only well-established relationship of morphologic class to immunologic type is in the FAB-L₃ class which is essentially always surface immunoglobulin positive (B-cell) type. The FAB-L₁ and FAB-L₂ morphologic classes appear to include both Non-T, Non-B and T-cell immunologic types.

Acute Myelogenous Leukemia

There are six major FAB classes of acute myelogenous leukemia.¹

- M₁ Myeloblastic Leukemia without Maturation
- M₂ Myeloblastic Leukemia with Maturation
- M₃ Hypergranular Promyelocytic Leukemia
- M₄ Myelomonocytic Leukemia
- M₅ Monocytic Leukemia
 - Poorly Differentiated (Monoblastic)
 - Differentiated
- M₆ Erythroleukemia

The classes are separated on the basis of the direction of differentiation and the degree of maturation of the neoplastic cells.

*M*₁

The leukemic cells in the bone marrow show some evidence of differentiation. The myeloblasts are often non-granular and contain one or more distinct nucleoli, 3% or more of the myeloblasts are myeloperoxidase positive. A proportion of the leukemic cells may contain a few azurophilic granules, Auer rods or both; further maturation is not seen

*M*₂

Maturation of the leukemic cells at or beyond the promyelocyte stage is present. The leukemic cells are often nucleolated and have varying amounts of cytoplasm usually with many azurophilic granules. Auer rods are common and cells are myeloperoxidase positive. Abnormalities in maturing granulocytes such as hypogranulation and hyposegmented nuclei are common. A minor leukemic erythroid or monocytic component may be present.

*M*₃

The great majority of leukemic cells are abnormal promyelocytes with a characteristic pattern of heavy granulation. The nucleus varies greatly in size and shape and is often "monocytoid" or bilobed. Leukemic cells containing multiple Auer rods are present in nearly all cases; large, oval azurophilic cytoplasmic inclusions are often present. *M*₃ must be distinguished from *M*₂ cases in which the percentage of promyelocytes is high. Recently variants of *M*₃ have been described in which the neoplastic cells lack the typical hypergranulation but have all of the other morphologic, cytogenetic, ultrastructural and clinical characteristics of *M*₃. These variants have been referred to as microgranular acute promyelocytic leukemia.^{5,6}

*M*₄

Both leukemic granulocytic and monocytic differentiation are present in varying proportions. *M*₄ may resemble *M*₂ in all respects, except the proportion of leukemic promonocytes and monocytes exceeds 20% of the bone marrow cells. A non-specific esterase stain may be required to distinguish *M*₄ and *M*₂.

*M*₅

The diagnosis of *M*₅, although based on morphology, often requires confirmation with the non-specific esterase stain.

Poorly Differentiated (Monoblastic)

Monoblasts are the predominant leukemic cell; a minority population of promonocytes may be present. The monoblast shows little or no evidence of nuclear maturation and usually contains a large vesicular nu-

cleolus. The cytoplasm is basophilic and may contain a variable amount of azurophilic granulation. The myeloperoxidase stain is negative or weakly positive in a few leukemic blasts.

Differentiated

Promonocytes are the predominant leukemic cell; maturation to mature monocytes is usually present. The promonocyte is similar to the monoblast but has a large cerebriform nucleus and the cytoplasm is usually less basophilic.

*M*₆

The leukemic erythroid component usually exceeds 50% of the bone marrow cells. Erythroblasts show striking dyserythropoiesis, often bizarre morphologic features are present. Increased myeloblasts are present; Auer rods are frequently seen. Erythroblasts are often PAS positive. Abnormal megakaryocytes are usually identified. The predominant erythroid component distinguishes *M*₆ from *M*₂.

Table 2 summarizes the cytochemical characteristics of the various classes of acute myeloid leukemia.

TABLE 2

Cytochemical Characteristics of Acute Leukemias

	Myeloperoxidase Sudan black-B Chloracetate Esterase	Alpha Naphthyl Acetate Esterase	PAS
Myeloid Leukemias			
<i>M</i> ₁	- To + + +	- To ±	- to + (Diffuse)
<i>M</i> ₂	+ To + + + +	- To ±	- To + (Diffuse)
<i>M</i> ₃	+ + + +	- To ±	- To + (Diffuse)
<i>M</i> ₄	+ To + + +	+ + To + + +	- To + (Diffuse or Granular)
<i>M</i> ₅	- To +	+ + + +	- To + (Granular)
<i>M</i> ₆	+ To + + (Myeloblasts)	- To + + (Monocytic cells)	- To + + + (Granular)
Lymphoblastic Leukemias			
	-	- to + (Clumps)	- To + + + (Granular or Clumps)

The frequency of the various FAB classes of acute myelogenous leukemias may vary considerably in different studies. These differences appear to be a function of the patient population and referral patterns in different institutions as well as discrepancies in classification between different observers. The dis-

CLASSIFICATION OF ACUTE LEUKEMIAS — MCKENNA

tribution by FAB class of 250 cases of acute myelogenous leukemia in the study of Sultan et al is shown in Table 3.⁷

TABLE 3

**Distribution of Acute Myeloid Leukemia
In Adults by FAB Classification⁷**

M₁	21%
M₂	32%
M₃	16%
M₄	16%
M₅	12%
M₆	3%

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Allegations

Negligent failure to diagnose panhypopituitarism.

Facts of Case

The patient, a 66-year-old male, was hospitalized with general aching and weakness. Dr. I, internist, ordered lab tests but the patient was discharged, without a definite diagnosis or treatment, before all results were returned. The patient was referred to another clinic and was not seen again by Dr. I. A report of the patient's serum cortisol level, specifically citing possible panhypopituitarism, was later forwarded to Dr. I's office. This report, however, was filed in the patient's record without being brought to the attention of Dr. I. The patient, therefore, was not contacted about the test results. The diagnosis of panhypopituitarism was made one year later by another physician and appropriate treatment was begun. Dr. I did not find the significant lab report in the patient's file until after a malpractice claim had been asserted against him.

Disposition

\$20,000 settlement.

Reasons for Settlement

Using Dr. I's own medical record, the patient's attorney was able to prove that Dr. I negligently failed to follow up on the results of tests he had ordered. Expert review for the defense agreed that the diagnosis should have been made by Dr. I and that the one year delay resulted in an extended period of discomfort for the patient. Settlement value was based primarily on the cost of the second hospitalization necessitated by Dr. I's failure to diagnose.

Risk Management Comment

Lab, X-ray, and other reports are frequently unavailable at the time a patient is being seen. However, physicians have an obligation to follow up on pertinent medical information made available to them. Physicians should have an effective "tickler" system for obtaining and responding to the results of all tests ordered. No reports should be filed in the patient's chart without an indication that they have been reviewed by the physician.

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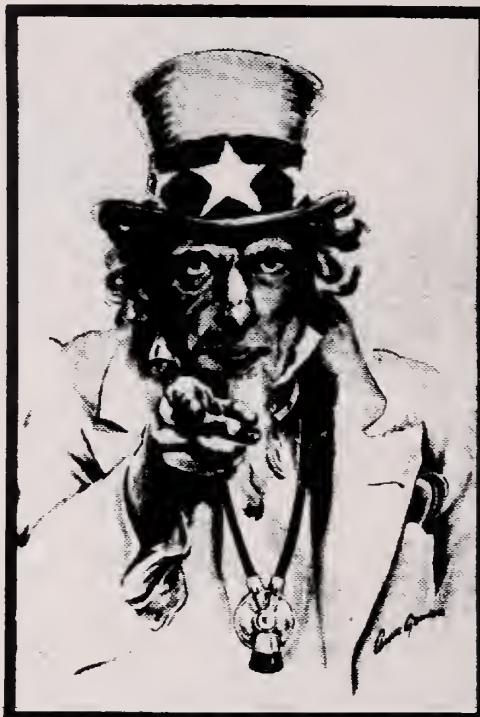
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The Physician's Role in Health Care Marketing

THEODORE L. FREDRICKSON, Ph.D.*

MUCH OF MARKETING has to do with changing the perceptions people may have toward a particular product, service, person, or idea. As a consultant to physicians on marketing issues for the Minnesota Medical Services Corporation, I spend much of my time helping physicians understand that there are many perceptions and misperceptions held by business, patients, and the general public about their role in controlling health care costs.

Some of these perceptions include:

1. The Coalition Committee on Health Care Cost Containment of the Twin Cities believes that physicians are the "general contractors" and directly or indirectly control up to 70% of the cost of health care, whereas the hospital is the "subcontractor" and controls the other 30%.

2. Many business people feel that hospitals have made tremendous strides on health care cost containment over the past few years, but physicians have not.

3. A recent study completed by the Minnesota Medical Association indicated that 92% of the citizens in Minnesota perceive health care costs to be too high, and they see physicians as the main players in the game to control these costs.

4. That same MMA study revealed that 63% of the public believed physicians could reduce the overall cost of health care by 10-25%. Another 27% of the public stated physicians could reduce the cost of health care by 26-50%!

You may not, and I am sure you won't, agree with these points. However these are the *perceptions*, not facts, held by people about physicians — and perceptions are important because they directly affect behavior.

Dealing with these perceptions, or misperceptions, is a large task in itself; but add to these misperceptions, the misunderstanding that many physicians have about how to handle their own business, and you end up with some complex business/marketing problems.

Listed below are observations I have made about physicians and their businesses over the past few years.

1. Many physicians fail to realize that they are no

longer in a small business but have grown into an intermediate size business. Clinics of 8-15 physicians are quite common across Minnesota, and clinics of more than 15 physicians is the trend. However, many of these clinics have the same systems and procedures that were developed when the group contained just one or two physicians.

2. Many physicians expect miracles from their practice managers. Practice managers are having the same difficulty in responding to the rapid changes in the health care environment as are physicians. Many practice managers were hired when the size of the business was much smaller, and they were not expected to possess all of the skills which are now needed to manage a larger business operating in a much different environment.

3. Physicians are typically poor business planners. Planning is not an enjoyable activity for the majority of physicians, because they are often very action oriented plus planning does not produce revenue in the short run. However as Peter Drucker states, "managers/owners must do their own planning." What Drucker means is that planning can't always be delegated to someone else or completed by a consultant. Physicians simply must become more involved with the planning of their businesses.

4. Many physicians are unsure of how this concept called marketing can help them. Many have not yet felt the pressure of the rapidly changing competitive health care marketplace. On one end of the continuum there are physicians who perceive marketing to be simply advertising, and on the other end of the continuum there are physicians who perceive marketing to be much too complex and to become involved with marketing will take too much of their time.

So, what is the physician's role in health care marketing? The physician's role is to help develop business and marketing plans and strategies which change *perceptions*.

Some of the responses I see physicians taking to this unsettled health care environment with all its misperceptions are:

1. More cooperative marketing efforts where three or four small clinics may joint venture to a) market their services, b) offer discounts to employers for such things as "well baby care," yearly OB/GYN checkups, and annual physicals, and c) for bulk pur-

*Associate Professor of Business Administration, College of St. Thomas, St. Paul, Minnesota.

chasing efforts. This would not be a prepaid system but a modification of the traditional fee for service medicine.

2. Formalized mergers of two or more clinics resulting in the following benefits; a) leadership in certain markets, b) greater financial strength, c) enhanced competitive position; and d) the delivery of efficient and cost effective services.

3. More joint ventures between physicians and hospitals. The benefits resulting from this may be; a) shared costs and risks of marketing efforts, b) changing perceptions of business and the public about health care costs — showing them that such things as utilization review are important to both the physicians and the hospitals and that they are cooperating on the issue of health care cost containment. The MESH

concept and PPOs are examples of "joint ventures" presently on the scene.

4. More professionally managed clinics run by more professionally business trained practice managers being assisted by physicians involved in the planning process.

The perceptions, problems, and responses of the health care environment in Minnesota will mean that physicians must learn to understand the marketing concept. Marketing is not simply a bag of tricks to manipulate patients, but marketing is responding to the environment, a philosophy, a way of doing business, patient oriented, not doctor oriented, and marketing is planning done now — not reactive but proactive!

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References:

1. Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.
2. Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. Chest 78 (July suppl):234-238, 1980.

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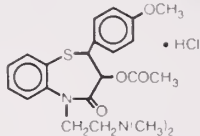
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2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenously diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash, asthenia (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of the proportion corresponding to the relative frequency of occurrence:

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and ataxia.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, mild elevations of alkaline phosphatase, SGPT, and LOH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted: A patient with Prinzmetal's angina experiencing episodic vasospastic angina developed periods of transient asystole approximately five hours after receiving a single dose of CARDIZEM.

The following postmarketing events have been reported in patients receiving CARDIZEM: erythema multiforme, kopena, and extreme elevations of alkaline phosphatase, SGPT, LOH, and CPK. However, a definitive cause and effect relationship between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.60 to 1.0 mg) if no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed-degree AV block should be treated with cardiac pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretic vasopressors (eg, dopamine or levobitartate).
Hypotension	

Actual treatment and dosage should depend on the severity of the clinical situation and the judgment and experience of the physician.

The oral LD_{50} 's in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD_{50} 's in these species were 60 and 38 mg/kg, respectively. The oral LD_{50} 's in dogs is considered to be in excess of 50 mg/kg, while lethal doses have been seen in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSA GE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals and bedtime, dosage should be increased gradually (given in three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage appears to be 180 to 240 mg/day. There are no available data on dosing requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

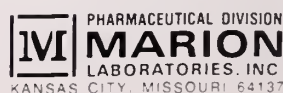
Concomitant Use With Other Antitanginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be administered with short- and long-acting nitrates. There have been no controlled studies to evaluate the effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (NDC 0088-1771-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1771-49). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1772-49). Each white tablet is engraved with MARION on one side and 1772 on the other.

Another patient benefit product from



A Clinical Trial of Bupropion in the Treatment of Depressed Outpatients

SIDNEY HUGHES, M.D.*, SOL BARNETT, M.D.†, PAUL SOSNOUSKI, M.D.‡, and D. F. KIRKSEY, Ph.D.††

BUPROPION (WELLBUTRIN®), is a new, nontricyclic antidepressant that is novel in both molecular structure and neurochemical profile.^{1,2} In controlled clinical trials in depressed patients, bupropion produced antidepressant effects at doses of 300 mg to 450 mg/day. When used to treat depressed inpatients, the agent produced antidepressant effects within five days to three weeks; 70% experienced substantial clinical improvement within a month. Safety data from these trials indicate that bupropion is safe in overdose, rarely exhibits cardiotoxic or sedating effects, and exhibits no adverse interactions with concomitant medications.^{3,4,5} Bupropion's antidepressant activity is comparable to that of amitriptyline while producing fewer drug-related adverse experiences and no weight gain.⁶

Depression is widespread in the United States, and it has become increasingly common for patients with depressive disorders to be diagnosed and treated by an internist, general practitioner, or family physician rather than by a psychiatrist. Many nonpsychiatrist physicians are finding that the management of depressed patients constitutes a substantial portion of their practice time. Depression is included in the ten most common diagnoses in family practice,⁷ and an estimated 15% to 30% of patients seen by family practice physicians in the United States and Europe exhibit clinically significant symptoms of depression.⁸⁻⁹

The depressive symptomatology most often exhibited by these patients includes: depressed mood, fatigue, gastrointestinal disturbances, anxiety, sleep disorders, and pain of nonorganic origin. When any symptoms of these types last longer than two weeks and there is no apparent organic cause, they are more likely to be the result of depression than of any other disease or disorder. It is thus apparent that many nonpsychiatrist physicians will be faced with the problem of managing depressed patients.

Given the effectiveness and adverse experience profile of bupropion as demonstrated primarily

through academic research studies, this trial was undertaken to evaluate the efficacy and safety of the drug in depressed outpatients being treated by non-psychiatrist physicians in private practice.

Study Design

The efficacy and safety of bupropion were evaluated among patients at three centers participating in a four-week study. (Patients who responded to this short-term treatment regimen had the option of continuing on a long-term basis in a follow-up study.) Exclusion criteria concerning concurrent medical illness and concomitant non-psychiatric medication were minimal, and there was no patient upper age limit. All patients were required to sign a Statement of Informed Consent.

Efficacy data were evaluated for all patients who had been in the study for at least 14 days; safety data were evaluated for all for whom any data were obtained.

Medication

Medication consisted of bupropion hydrochloride in dosages ranging from 150 to 450 mg/day. Doses were administered via 50 mg, or 100 mg tablets, taken t.i.d., with at least 6 hours between each dose.

Safety and Efficacy Evaluations

Safety and efficacy were evaluated according to changes in scores obtained at baseline (study day 1) and during treatment (days 8 and 15) and at termination (the last day of treatment, usually day 29).

As shown in Table 1, the Clinical Global Impressions Scale (CGI), and Zung Self-Rating Depression Scale (SDS), vital signs, and adverse experiences were assessed at each visit. The Hamilton Depression Scale (HAM-D), physical examination, and clinical laboratory tests were performed at baseline and at termination.

Efficacy was evaluated through changes from baseline in all HAM-D, CGI, and SDS scores at each of three evaluation points (study days 8, 15, and 29).

Safety was evaluated through analysis of changes in physical examination results and clinical laboratory evaluations (hematology, blood chemistry, uri-

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TABLE 1
Schedule of Assessments

Assessment	Study Day			
	1	8	15	29*
Demographic data	X			
Physical examination	X			X
Vital signs	X	X	X	X
Hamilton Depression Scale	X			X
Clinical Global Impressions Scale	X	X	X	X
Zung Self-Rating Depression Scale	X	X	X	X
Adverse experiences	X	X	X	X
Clinical laboratory tests (hematology, blood chemistry, urinalysis)	X		X	
EKG	X+			X+
EEG	X+			X+
Neurologic examination	X+			X+
Ophthalmologic examination	X+			X+
Medication record	X	X	X	X
Patient termination record				X

* Evaluations performed on day 29 or termination.

+ Performed only if a known preexisting abnormality would be reflected in this measure.

analysis) performed at baseline and termination. In some cases, the physical examination and medical history at entry revealed a condition that did not prevent inclusion in the study but did require close monitoring. These patients underwent an EKG, EEG, and neurologic and/or ophthalmic examination at baseline and at termination.

An analysis of variance (ANOVA) was used to evaluate treatment phase changes in baseline vital signs and psychiatric scores, and the Wilcoxon Signed Rank test was used to evaluate changes in clinical laboratory values.

Adverse Experiences

Adverse experiences during treatment were recorded on a 59-item checklist, or in the additional write-in space provided. Each event was evaluated for intensity and probability of being drug related, with a notation of any action taken by the investigator.

The total incidence of each type of event was reported as both the percent of patients (total number of patients reporting an experience/total number of patients assessed) and percent of assessments (total number of reports of an experience/total number of assessments for adverse experiences).

Results

Of 28 patients entering the study, 27 were included in the safety evaluation and 25 in the efficacy evaluation. As shown in Table 2, the average patient was female, white, 53-years-old and married, with a skilled job and at least a high school education.

Of the 25 patients included in the efficacy analysis, nine (36%) were diagnosed (DSM III) as suffering from single or recurrent major depressive disorders, seven (28%) from dysthymic disorder, depressed type, and eight (32%) from adjustment disorder with depressive mood. A single patient had a bipolar affective disorder, depressed type. Fifteen patients (60%) had already experienced the same or a similar condition, and the current episodes had lasted for an average of 14 months.

Most patients had experienced gradual (60%) or very gradual (28%) onset of the current condition. Patients were an average of 41 years old when they first sought treatment, and only one patient had ever been hospitalized for psychiatric treatment.

Dosage and Co-administered Medication

The daily bupropion dose ranged from 150 to 450 mg/day and the most frequently prescribed dosage was 300 mg/day.

TABLE 2
Combined Center Demographic Characteristics
for Patients Included in
Safety and Efficacy Analyses

Characteristics	Safety		Efficacy	
	No.	%	No.	%
Number of patients admitted = 28				
Number in analyses	27	96%	25	89%
Sex				
Female	22	81	20	80
Male	5	19	5	20
Race				
Caucasian	22	81	20	80
Negro	5	19	5	20
Other	0	0	0	0
Age (yrs.)				
Mean	52.8	—	52.8	—
Range	21-79	—	21-79	—
Marital status				
Married	19	70	18	72
Single*	8	30	7	28
Occupation*				
Skilled	19	70	19	76
Semi-skilled or unskilled	8	30	6	24
Education*				
High school or above	23	85	21	84
Less than high school	4	15	4	16

* Never married, separated or divorced, or widowed.

+ Categories may not include total number of patients due to missing assessments for some patients.

Twenty-five of the 27 patients included in the safety analysis also received medication other than bupropion. In five cases (19%), the concomitant medication was an anxiolytic agent; in ten cases (37%), a cardiovascular agent; in three cases (8%), a hypnotic agent. There were no reports of any of these drugs interacting adversely with bupropion.

Efficacy Evaluations

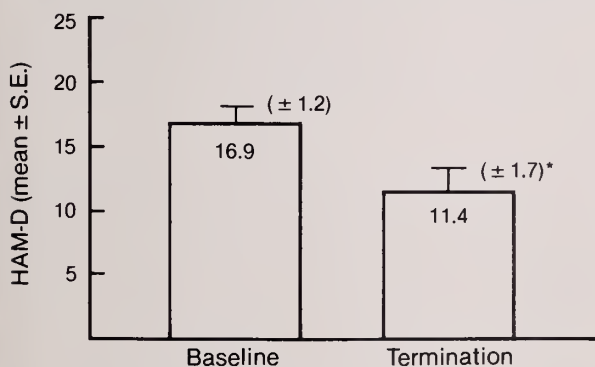
As indicated by all HAM-D, CGI, and SDS scores, there was clinically and statistically significant improvement in depressive symptomatology at each of the three evaluation points (study days 8, 15, and 19) during bupropion treatment. These changes are shown in Figures 1-4.

The mean HAM-D score of 16.9 ± 1.2 at baseline decreased to a mean of 11.4 ± 1.7 at termination. The average patient improved from mildly mentally ill to borderline mentally ill between baseline and termination of bupropion treatment and the SDS scores reflected this improvement. Thus, patients of many ages and with widely differing diagnoses and depressive symptoms exhibited an antidepressant response to treatment with bupropion.

Three large double-blind studies have already shown that bupropion is more active than placebo,⁵ and in two major trials, bupropion produced results comparable to those of high-dose amitriptyline (150-225 mg/day).^{6,10} The results obtained in this trial are important because they are in line with those of previous studies and because the patients treated were less severely ill and thus highly representative of the outpatient population seen by a nonpsychiatrist physician providing primary care in private practice.

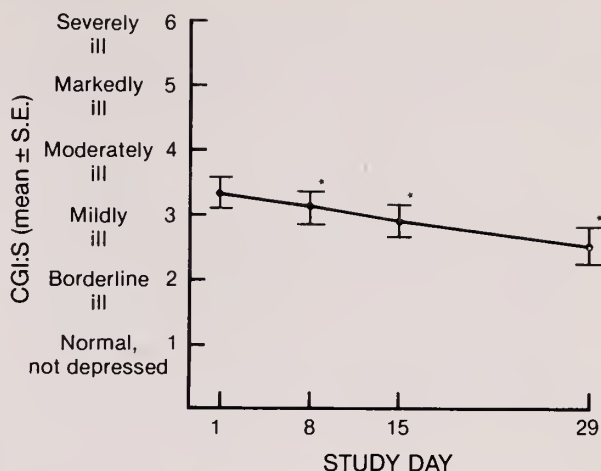
Safety

There were no statistically or clinically significant



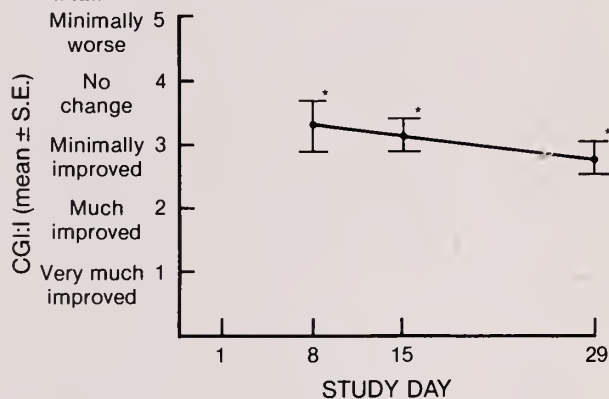
*Total score is significantly less ($p < 0.05$) than baseline total score.

Fig. 1 — Mean Hamilton Depression Scores at baseline and termination (usually day 29) of bupropion



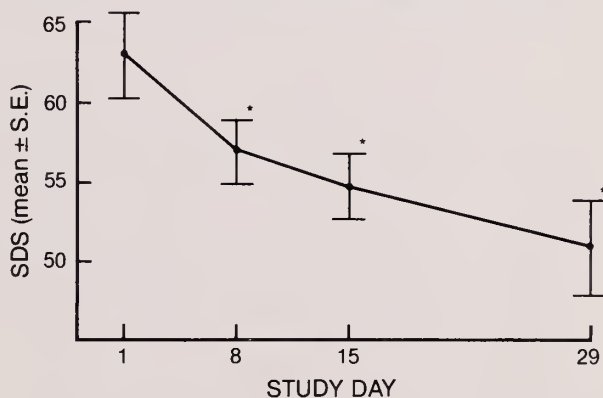
*Total score is significantly less ($p < 0.05$) than baseline Severity of Illness Rating.

Fig. 2 — Mean Clinical Global Severity of Illness Ratings at baseline and at days 8, 15, and 29 (termination) of bupropion treatment.



*Total score is significantly less ($p < 0.05$) than rating = 4 ("no improvement").

Fig. 3 — Mean Clinical Global Improvement Ratings at baseline and at days 8, 15, and 29 (termination) of bupropion treatment.



*Total score is significantly less ($p < 0.05$) than baseline total score.

Fig. 4 — Mean Zung Self-Rating Depression Scores at baseline and at days 8, 15, and 29 (termination) of bupropion treatment.

changes in vital signs between entry and termination. Analysis of laboratory values showed a statistically but *not* clinically significant change in mean white blood cell counts between baseline and termination. This was the only statistically significant change observed in laboratory values, and no case resulted in discontinuation of treatment.

The average patient experienced no statistically significant weight gain between baseline and study day 29.

Physical examination and other optional medical evaluations showed no clinically significant changes during bupropion treatment.

Adverse Experiences

Of the adverse experiences reported most often during the study, the percent patient reports increased slightly during the treatment phase for six adverse experiences: dry mouth (+18%), numbness (+12%), confusional state (+11%), constipation (+11%), flushing (+11%), and pruritis (+11%). However, when the incidence of adverse experiences was examined by percent of assessments, substantial decreases were recorded for six of the adverse experiences most often present at study entry: tiredness/fatigue (−44%), insomnia (−19%), drowsiness/sleepiness (−18%), headaches (−15%), nightmares (−14%), and decreased libido (−14%) (Figure 5).

In most cases, the adverse experiences reported were mild and patients continued treatment without difficulty. In five cases, patients left the study because of intolerance to side effects. The adverse experiences reported are shown in Table 3. During the bupropion therapy, there was a noteworthy lack of daytime drowsiness, feelings of being drugged, and cardiovascular side effects, all of which are frequently reported during treatment with the most commonly used tricyclic antidepressants.

Discussion

The results of this study suggest that bupropion at doses of 150-450 mg/day is both safe and effective for the treatment of mild/moderately depressed outpatients in nonpsychiatric private practice settings. Bupropion's antidepressant activity was evident in the marked and consistently significant reductions in depression (and anxiety) symptoms indicated through the HAM-D, CGI, and SDS scales for depression.

Bupropion's safety was demonstrated by the fact that no patient experienced any clinically significant changes in blood pressure, pulse rate, respiration rate, body temperature, or body weight during treatment. The adverse experiences reported at study entry often

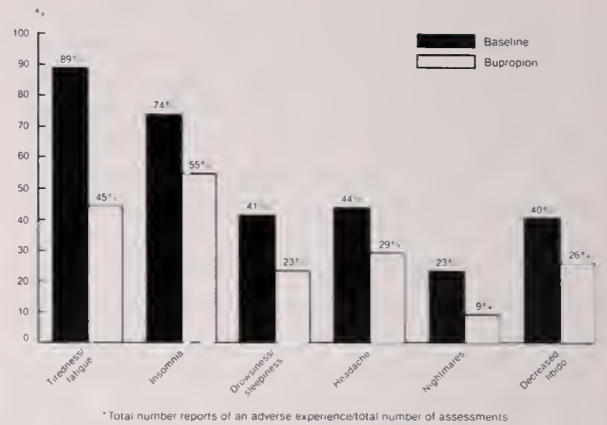


Fig. 5 — Incidence of adverse experiences as based on percent of assessments at baseline and during bupropion treatment.

TABLE 3
Summary of Patients Discontinued Due to Adverse Experiences

Experience*	Number of Patients Reporting +
Decreased appetite/anorexia	2
Drowsiness/sleepiness	2
Heartburn	2
Incoordination	2
Tiredness/fatigue	2
Agitation/excitement	1
Confusional state	1
Constipation	1
Diarrhea	1
Disturbed concentration	1
Dizziness	1
Headache	1
Insomnia	1
Nausea/vomiting	1
Palpitations	1
Tremor	1
Total number of patients discontinued because of any adverse experience	5

* Adverse experiences reported to be at least possibly drug-related.

+ Patients who were discontinued due to intolerance most often reported more than 1 category of adverse experience. The number of adverse experiences reported at discontinuation for each patient ranged from 1 to 7.

decreased, sometimes substantially, following initiation of treatment. Five patients found it necessary to discontinue from the study because of intolerance to possible drug-related effects. (The percentage of patients discontinued in this trial was higher than the percentage of patients discontinued due to adverse experiences in previous placebo-controlled studies.^{4,5}) There were no reports of adverse drug interactions during bupropion therapy, although 93% of the patients in the safety analysis were taking concomitant medication.

Thus, treatment with bupropion appears to produce substantial antidepressant effects and a minimum of adverse experiences.

Acknowledgments

The authors gratefully acknowledge the skilled assistance of Theda Hester, R.N., Janet Scharlau, R.N., and Elaine Raines.

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An Account of Indomitable Courage

JACK D. KEY, M.A., M.S.*

Dr. Sydney H. Gaiger (1884-1934), who died at the age of 50 while professor of pathology in the University of Liverpool Veterinary School, had been at one time (1911) on the staff of a veterinary college in India. While there he contracted glanders from an Arabian pony and suffered severe illness from this infection for a number of years. Glanders a contagious disease of horses is communicable to man. "It is marked by a purulent inflammation of mucous membranes and an eruption of nodules on the skin which coalesce and break down, forming deep ulcers, which may end in necrosis of cartilages and bones."¹

Gaiger described his own case in two articles in the medical literature, illustrated by radiographs and clinical charts.^{2,3} His lesions included osteomyelitis, which resulted in amputations — first a finger, then his left hand and eventually his forearm and part of his upper arm. In total, over just a few years, he underwent a series of 82 surgical operations involving lesions over practically his whole body, and apparently only 27 of these operations were under general anesthesia.

During a time before the use of antibiotics one can imagine the suffering that Gaiger experienced. One illustration of his character can be presented with the following quote.

I owe my life to so many people's kindness that it would be almost impossible to say to whom I am most indebted, but I cannot finish this article without expressing my warmest thanks for the skill displayed and the kindness and generosity shown towards me, by surgeons, physicians, and pathologists, nearly forty in number, who have dealt with my case . . .³

Gaiger wrote a textbook on veterinary pathology and bacteriology. It was a useful book to the student of that time, but its section on pathology was sketchy and weak. In fact, this section was considered by some more of a joke than a work worthy of serious study. If one reads the two Gaiger articles and reflects on his physical handicaps as well as what he had been through, then that book was really a remarkable accomplishment. His two articles on glanders in man make for inspiring reading. They are excellent examples of objective and meticulous reporting of disease symptoms and lesions. They are also chronicles of suffering successfully endured.

This man made many and varied contributions to veterinary science. He was considered an excellent teacher and researcher. The year before his death Gaiger served as President of the Royal College of Veterinary Surgeons. He deserves an honored place in the annals of those who combat disease.

*Librarian, Mayo Clinic, Rochester, Minnesota.

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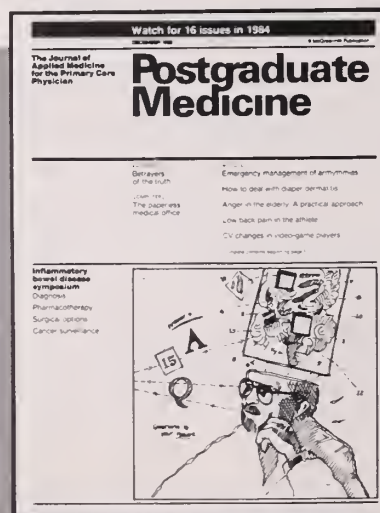
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The Development of Inhalation Anesthesia

RAYMOND C. BONNABEAU, JR., M.D., Ph.D.

ALTHOUGH ALL MEDICAL discoveries are predicated on earlier events, the development of inhalation anesthesia depended on an accurate description of the respiratory system. The proper description of respiration started with the discovery of the circulation of the blood by William Harvey in 1628. His small book revolutionized anatomical study and laid the basis for a sound physiology. His discovery showed that the entire body was supplied by one vascular system through a centrally located pump. Although Harvey noted the difference in blood color (arterial red, venous dark), he felt it was due to an artifact. Richard Lower (1631-1691) experimentally showed that the change of color of the blood was due to its being exposed in the lungs to air. Borelli had also come to a similar conclusion (1680).

At this time period, air was considered as a single entity. Robert Boyle had shown that a vacuum (air removed via Von Guericke's air pump) would extinguish a candle or kill a small animal. Thus, air was essential for life. Robert Hooke (1635-1702) in 1667 demonstrated that fresh air was important for life, and that chest movements were necessary only as they were a means to supply the lungs with a new supply. John Mayow (1643-1679) had shown that air was not composed of just one substance, but, in fact, was partially composed of a substance that was essential for life. This he called nitro-aereal or igneo-aereal salt, a substance that would later be called oxygen.

Joseph Black (1728-1799) discovered "fixed air" or carbon dioxide in 1757. This was the same "gas silvestre" described earlier (1640) by Van Helmont. Nitrogen was discovered by Rutherford, in 1772, and found to be that part of the atmosphere that would not support life. The name was suggested by the French chemist Chaptal. It was Joseph Priestly (1733-1804) who by initially experimenting with plants and mercuric oxide demonstrated the presence of oxygen in the atmosphere as the supporter of life in 1774. He also discovered nitrous oxide in 1772. Later in 1781, Cavendish demonstrated the existence of hydrogen. Antoine Lavoisier (1743-1794), building on those

facts, showed that during respiration two things occurred: Oxygen diminished, and fixed air (or carbon dioxide) increased and originated from the lungs.

Thus, by the early 19th Century the details of respiration and the essential gasses were largely known.

Many attempts had been made throughout the ages to alleviate pain. These methods were usually drugs, such as alcohol, or medications obtained from plants such as opium (poppy), henbane (an alkaloid hyoscyamine and scopolamine), hemp (cannabis), and mandragora (European mandrake, similar to belladonna).

Other crude forms of anesthesia also were used, such as compression or nerve roots and cooling by packing a limb in snow prior to amputation.

Other efforts at pain relief were also employed during the 18th century. The two most notable were the development of Mesmerism by Franz Mesmer and the use of hypnotism by Count Maxime de Puységur. The former was exposed as fraudulent, while the latter, unfortunately, failed to relieve pain. It was tried at Massachusetts General Hospital by the surgeon Dr. John Collins Warren.

In 1800, Sir Humphrey Davy (1788-1829) used nitrous oxide on himself to alleviate the pain of a wisdom tooth. He wrote that since it "appears capable of destroying physical pain, it may probably be used with advantage during surgical operations . . ."

Michael Faraday (1791-1867), noted in 1818 that the effects of ether were similar to those of nitrous oxide (Faraday was a pupil of Davy's), i.e., soporific.

The history of modern anesthesia starts at this time. In 1824 Henry Hill Hickman (1800-1830) noted the principle that inhaled gases would be absorbed from the lungs into the circulation and thus could produce a state of sleep prior to surgery. He had used carbon dioxide gas in animal experiments and suggested its use on humans. He was largely ignored.

During this period, both nitrous oxide and ether were used for their exhilarating and intoxicating effects and many "ether parties" and demonstrations of "laughing gas" were held. These took place at parties as well as at public demonstrations performed by itinerant "chemistry professors."

Although ether anesthesia was administered by

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William E. Clark during the extraction of a tooth in January, 1842, the real history of anesthesia use started some two months later. On the afternoon of March 30, 1842, Dr. Crawford W. Long of Jefferson, Georgia removed a small tumor from the neck of a friend, James M. Venable. While Long had witnessed many "ether frolics" while a student at the University of Pennsylvania, he apparently knew little of the effects of nitrous oxide. Venable did not feel any pain and Long continued to employ ether in his practice. He finally published a report of this practice in December, 1849, in the Southern Medical and Surgical Journal. Long also used ether in his obstetrical cases around the same time as did Sir James Simpson (1847).

On the evening of December 10, 1844, Gardner Q. Colton, a traveling lecturer, demonstrated the effects of nitrous oxide before an audience at Union Hall in Hartford, Connecticut. A drug clerk, Samuel A. Cooley, volunteered to try the gas. After inhaling the gas, during the excitement it produced in him, he accidentally cut his leg. He sat down without realizing it, since he had felt no pain. A Hartford dentist who was sitting next to Cooley, Dr. Horace Wells, noticed this, and tried the gas himself. Wells then asked Colton if he thought it could be used to extract a tooth painlessly, and if he would help. On the next day, December 11, 1844, Colton administered the gas to Wells himself, and one of his molars was extracted by an associate, Dr. John M. Riggs. Wells felt no pain. Wells, after having Colton show him how to prepare the gas and use it, visited his former student and partner in Boston, Dr. William Thomas Green Morton.

Morton had witnessed the previously unsuccessful demonstration by Wells of the gas at Massachusetts General Hospital where he was then a student at the Harvard Medical School. His preceptor was Dr. Charles A. Jackson, who was a chemist as well as a physician.

Morton, who was also a dentist, had developed a process of making artificial teeth that necessitated a very painful removal of roots before fitting could be carried out; thus, he was on the lookout for a means to deaden or prevent pain. In July 1844, Morton was treating a woman who had more pain than usual. His mentor, Dr. Jackson, had previously suggested to him that the direct application of sulfuric ether to the

tissue might deaden it. (Jackson had previously used ether breathing himself to relieve pain in 1841.) While doing this, Morton noted the numbing effects on the surrounding parts of the face.

Morton, during this time, conceived the idea of inhaling ether to anesthetize patients and started to try it on different animals, as well as fish and worms. Morton also experimented on himself as well as two dental assistants.

During these human trials, the excitement phase of the drug was excessive and Morton spoke to Jackson, who suggested that he try pure sulfuric ether. This incident was the basis for Jackson's later claim that he was the discoverer of anesthesia.

On September 30, 1846, a patient, Eben H. Frost, came to Morton's office and had his tooth extracted utilizing ether without pain.

As Wells had done, Morton next went to Dr. John Collins Warren at Massachusetts General Hospital and asked that he be allowed to administer ether during a surgical operation. Warren complied, and Morton was invited. On the appointed day, Morton was late, since he had been putting the finishing touches on a new ether inhaler. Despite a late entrance, he induced anesthesia in the patient, Gilbert Abbot, and Warren successfully removed a tumor of the jaw without discomfort or pain. The date was October 17, 1846.

Warren's later written remarks concerning ether anesthesia (or any inhaled anesthesia in general) are as pertinent today as they were in 1846:

"First. The breathing of the ethereal vapor appears to operate directly on the cerebral system . . .

Second. Muscular power was for the time suspended in some cases; . . .

Third. The action of the heart is remarkably accelerated in some cases, but not in all.

Fourth. The respiration is sometimes stertorous, like that of apoplexy."

Anticipating the development of anesthesia¹ as a specialized branch of medicine, Warren added, "I, therefore, would recommend that it (ether) should never be employed except under the inspection of a judicious person."

Reference

1. Oliver Wendell Holmes coined the term anesthesia since it "signifies insensibility — more particularly . . . to objects of touch." The word had previously been used by Plato in his *Timaeus* and by Dioscorides.

Group Health Program to Reduce the Incidence of Preterm Deliveries

PETER M. MARK, M.D.* and DIANNE EGGEN, R.N., B.S.N.†

GROUP HEALTH recently instituted a comprehensive program to reduce the incidence of preterm deliveries, based on the work of Dr. Robert Creasy at the University of California-San Francisco Medical Center. Creasy is presently Department Chairman at the University of Texas.

If Creasy's stunning results in reducing the incidence of preterm deliveries can be duplicated, the principles involved will have far-reaching implications in patient evaluation during pregnancy and amount of time caregivers spend with identified patients.

There is little doubt that present prenatal care is not always systematic or directed. Creasy demonstrated that a risk-rating system can be developed which accurately identifies pregnant women that are at high-risk for preterm birth and need more frequent prenatal assessments and intensive education.

Dr. Creasy has summarized groups of risk factors that may lead to preterm labor and delivery. Creasy and Marie Herron, R.N. have described a system to prevent preterm birth that includes methods currently used in prenatal care. This systematic care approach lowered the incidence of preterm birth at UCSF by less than 50%. Obviously, these results are remarkable and indicate possible changes in the delivery of prenatal care.

In the UCSF study, all pregnant patients were screened at 12 weeks and ten percent were found to be at risk for preterm labor. This number increased to fifteen percent at the rescreen (22-26 weeks gestation) due to risk factor changes. Yet, some patients subsequently did have preterm deliveries despite tocolytic therapy, circlage, enforced bed rest, etc. There were also a few patients that were not identified as high-risk, but did have preterm labor.

The national prematurity rate has remained essentially unchanged despite the introduction of at least five tocolytic therapy regimens and advances in prenatal diagnostic technology. We believe that Dr. Creasy has correctly identified the missing piece in

this riddle and has developed an effective method of dealing with the problem of preterm births.

The essence of Creasy and Herron's work has shown the following:

1. Patients fail for many reasons, including denial, to recognize labor, therefore, enter the hospital too far along in the labor process for effective tocolysis.
2. Physicians and nurses also participate in the denial process.
3. There are well-defined symptoms of early preterm labor (which Creasy and Herron have outlined) that patients can be taught so that they will react appropriately to the warning signs.
4. Many but not all of these patients can be identified as "high-risk" during prenatal care and participate in an intensive educational experience. Those who are not identified as "high-risk" should also be aware of the possibility of preterm birth and the basic warning signs. This is an example of the shift of emphasis which must be made in future prenatal curricula.
5. Using this system, a dramatic drop in preterm birth, parental grief and anxiety, fetal morbidity and mortality, and cost to the insurer can be achieved.

The Group Health program is available throughout its entire system. All pregnant patients will be evaluated using a screening tool which is similar to Creasy and Herron's. A protocol for frequent prenatal assessments, including pelvic exams, has been developed. Also, those patients identified to be at high-risk for preterm labor will participate in two classes designed specifically for this problem.

Dianne Eggen, Maternal-Child Health Education Coordinator at Group Health, was accepted and completed a nursing preceptorship at UCSF with Ms. Herron in November, 1983 and brought back valuable on-site experience to Group Health.

Group Health's program differs from UCSF's program in several ways. Our prenatal care is delivered in 11 medical centers throughout the metropolitan area and at five hospitals. UCSF's patient population is essentially served at one clinic and delivered at one

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†Health Education Department, Group Health, Inc., Minneapolis, Minnesota.

hospital. Our number of deliveries per year is over 3,000, which is twice the number in the UCSF program. The Group Health membership represents different cultural backgrounds than the UCSF population. The method of providing patient education at UCSF is on a one-to-one basis, but our program offers the information through classes.

The Group Health prenatal caregiver staff includes obstetricians, family practice practitioners and certified nurse-midwives. Management of high-risk patients is usually directed by the obstetricians.

The project is headed by a steering committee consisting of the authors, M.M. Aksoy, M.D., Ob/Gyn

Department Chairman, and Sherrill Nelson, Ph.D., Manager of Health Education. We feel that a multidisciplinary advisory group is essential, including nurse-midwives, dietitians, nursing administration, home nursing and statistical support.

If we can begin to duplicate Creasy and Herron's results in preventing preterm births, the implications are expansive for health care providers both in private practice and HMOs. Our initial results will be reported in this journal and at the annual state conference of the Great Plains Organization for Prenatal Health Care in October.

The American Academy of Allergy & Immunology

The American Academy of Allergy and Immunology is seeking the assistance of all interested and concerned physicians in a new project concerning deaths which are suspected to be from insect sting allergy.

The Committee on Insects of the Academy has been an aid in determining the cause of death in suspected insect sting fatalities. They are measuring the antibody titers against bee, wasp, hornet, and yellow jacket using RAST technique on the serum of the patients who have died unexpectedly possibly following an insect sting. They would like to receive 10 cc serum from any patient with a suspected insect sting death. In addition to the serum, they would appreciate a short clinical history and if an autopsy is done, a copy of the autopsy report. They will return the laboratory reports to the coroners, pathologists, or physicians who send them to them. There will be no fee for this service.

Please obtain the 10 cc serum as soon as possible after death and send to either of the physicians listed below.

Donald R. Hoffman, M.D.
Dept. of Pathology
East Carolina Univ. School of Medicine
Greenville, NC 27834

or

John W. Yunginger, M.D.
200 First Street SW
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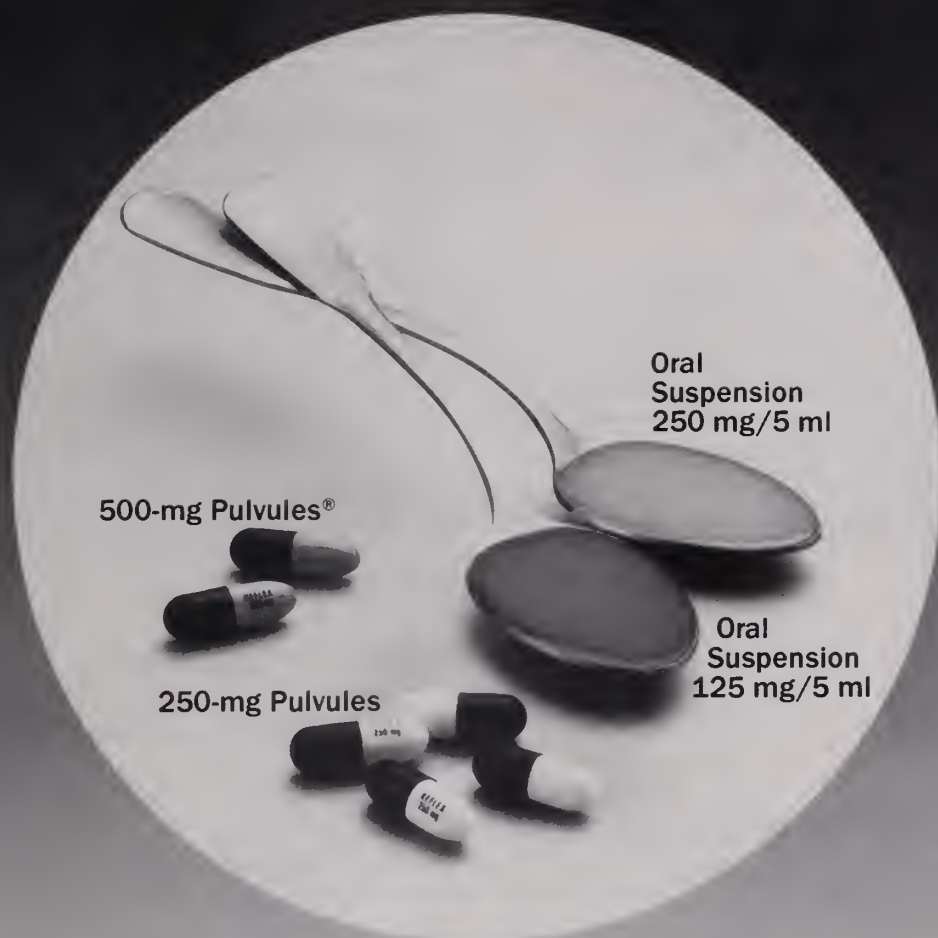
Please note the time elapsed between the death and the time of serum collection. The clinical history may be included with the serum or sent to the chairman of the Hymenoptera Sting Fatality Committee.

Joel D. Teigland, M.D., P.C.
1212 Pleasant Suite 109
Des Moines, IA 50309

Please notify the pathologists in your local hospitals and your regional coroners of this study. Your help is much appreciated.

Howard J. Schwartz, M.D.
Chairman, Committee on Insects
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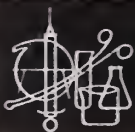
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Oliver Wendell Holmes, M.D.

Carl Oliver Rice, M.D.

Editor Emeritus

Oliver Wendell Holmes, M.D. (1809-1894) was the son of a Congregational minister. He rebelled, however, against the strictures of the Church and declined to follow in his father's footsteps.

After starting the study of Law he quickly became bored and shifted to that of Medicine, graduating from Harvard Medical School and finally becoming Dean of that school and Professor of Anatomy and Physiology.

His greatest contribution to medical literature was the "Contagiousness of Puerperal Fever," designed to alert doctors to the imperative necessity for asepsis.

He was noted for his subtle humor and was credited with having said, "If all the medicines devised by man were thrown into the sea, it would be the better for man and the worse for the fishes."

Holmes wrote prolifically in many fields, especially poetry, where his capacity to range from the sublime to the ridiculous is illustrated in the haunting spiritual cadences of "The Chambered Nautilus" right down to the rollicking nonsense of "The One-Hoss Shay."

Holmes and his wife, Annie Lee Jackson, were survived by one daughter and two sons, one of whom, Oliver Wendell Holmes, Jr., became a jurist and Supreme Court Justice, thereby further enhancing the name of Oliver Wendell Holmes.

Holmes' "One-Hoss Shay" became the model for the parody to follow: the litany of an over-worked young farm boy who, after eons of years and a series of terminal illnesses, found himself decaying so rapidly as to dissolve into dust and blow away — like the memorable one-hoss-shay.

Parody on The One Hoss Shay

by

Oliver Wendell Holmes

and

A man you might know

You may have heard, of the one hoss shay
That broke down somewhere, 'most every day.
'Till they finally built one, in such a way
That it lasted and lasted, till one fine day
It burst like a bubble one hundred years, and a day, and just blew away.
Once a young'un was made, to work on a farm;
He worked so hard that he said, "Gosh darn,
Cai'nt I ever have time for fun?" — "No you cai'nt
Clean the barn, swill the pigs, milk the cow, cut the hay.
Do tomorrow, what you don't do today."
After eons of years, his body wore out:
His heart, and his lungs, and his liver gave out.
He broke a few ribs, a wrist and a toe;
The most shocking of all: when he couldn't even pee,
A wire and a draino, let four quarts run out free!
He exercycled hard, in his running shoes
To recover the strength, in his hamstrings.
Did weird calisthenics, to the nth degree.
When his blood pressure dropped, was he ever vexed!

When he heard in his ears his heart beat, he was even perplexed!

His legs got weak, his knees caved in,
His shoulders sagged, he was just all in!
He lost his balance and couldn't stand,
Lest someone steadied, his stance by a hand.

He couldn't bend over, to pick up a pin.
Oh what a quandary, he was in!
Four-dimensional cosmos, allowed him to see, fore and aft,
Starboard and port side, where the people he saw
Were in books, which he knew very well.

His hair came out, his teeth got loose,
His skin turned red, and rolled inside out.
It itched so hard, he took a bath,
But all that did was make him chaff.
He tried a diet, but that didn't help;
Perhaps, what he needed, was fresh sea kelp.

Grew a cancer, as large as a ball on a tee.
Went to heaven, where he saw lots of friends, even Moses.
Multi-dimensional cosmos, passed by in the skies.
The magnificent, splendor and the small black hole,
Were a great surprise!

Then one day after he died, his corpse dissolved
Into dust so fine, that it just blew away,
And now I lay me down to sleep
I pray The Lord, my soul to keep.
If I should die before I wake
I pray, The Lord, my soul to take.
But the spirit went on and on and on,
"From dust thou art to dust returneth,
Was not spoken of the soul." *Ahmen!

*Henry Wadsworth Longfellow's "Psalm of Life."

Rheumatology Corner

Pleuropulmonary Manifestations of Rheumatoid Disease

SHARAD LAKHANPAL, M.D.* and HARVINDER S. LUTHRA, M.D.*

RHEUMATOID ARTHRITIS (RA) is a systemic disease in which in addition to the arthritis involvement of other organ systems including the skin, eyes, heart, lungs, etc. can occur. Although pleuropulmonary disease in RA at one time was controversial, it is now well established. This complication of RA (Table 1) is usually seen in the first five years of disease, more often in males than females and in patients who have nodular, extra-articular disease and are rheumatoid factor positive. Because of the relative physical inactivity of patients with active RA, the pulmonary involvement may go unnoticed until it is far advanced.

Pleural Disease

Pleural disease is the most frequent intrathoracic manifestation and has been documented in up to 50% of patients at autopsy in the form of pleurisy or pleural effusion. Although this may be asymptomatic, some patients may experience pleuritic chest pain, dyspnea and, less commonly, cough. Accompanying fever is a rare finding. Physical signs depend on the size of the effusion, and may sometimes be clinically undetectable. The effusion may be unilateral or bilateral. The pleural fluid is an exudate and the cells can be polymorphonuclear leukocytes as well as mononuclear cells. Many of these reveal intracellular inclusions which are immune complexes in lysosomal sacs. Evidence of the presence of immune complexes has been reported by both direct measurement as well as finding evidence of activated complement components. These findings, however, are nonspecific and can be seen in other conditions also. One of the characteristic features of the pleural fluid is the low level of glucose which is due to its impaired transport into the pleural space. If an infection and malignancy can be ruled out, rheumatoid disease may be the culprit. Although elevated levels of lactic dehydrogenase and lipids have been reported, these findings are nonspecific (Table 2).

Diffuse Interstitial Fibrosis

Mild pulmonary fibrosis may be clinically asymptomatic and only seen on Xray (1.6% of patients).

*Mayo Clinic, Rochester, Minnesota.

Pulmonary function tests, however, reveal abnormality in 30-40% of the patients including those with normal chest Xrays. Patients with this complication may develop progressive dyspnea on exertion with a non-productive cough. Tachypnea, clubbing of the fingers, as well as crepitations over lower lung fields are usually seen late in the course of the disease. Cyanosis may be an additional feature in patients developing pulmonary hypertension and heart failure. Chest Xrays usually reveal a diffuse reticular or a reticulo-nodular pattern in both lung fields. Pulmonary function tests reveal diminished lung volume and decreased CO diffusing capacity. Resting hypoxemia that worsens with exercise may be observed.

In general, these patients have a relatively benign course, although some patients may progress to end stage lung disease. Treatment with high dose corticosteroids may help in early disease.

Nodular Lung Disease

Pulmonary nodules, single or multiple, varying in size from a few millimeters to several centimeters can be seen on Xray. Histologically, they are similar to the subcutaneous rheumatoid nodules. Although these may remain asymptomatic, some patients may develop cough and hemoptysis; the nodules can cavitate and get infected. Occasionally, if pleural based, they may lead to pleural effusion, pleural thickening or bronchopleural fistula. The occurrence of a nodule or nodules in patients with rheumatoid arthritis is always

Table 1

Pleuropulmonary Manifestations of Rheumatoid Arthritis

1. Pleural disease
2. Diffuse interstitial fibrosis
3. Nodular lung disease (nonpneumoconiotic)
4. Rheumatoid pneumoconiosis (Caplan's syndrome)
5. Pneumonitis
6. Pulmonary arteritis

TABLE 2

Characteristics of Pleural Fluid in Rheumatoid Arthritis

1. Low glucose — 10-50 mg/dl
2. Cells — 1000-3500/mm³
3. High protein — about 4 gm%
4. High lactic dehydrogenase
5. Low complement
6. High lipid and cholesterol

a difficult problem for the attending physician since these cannot be distinguished from malignant metastatic nodules.

About 30 years ago the presence of single or multiple well-defined opacities situated in the periphery of the lung in Welsh coal miners, suffering from pneumoconiosis and RA (Caplan's syndrome), was described. Since then, these findings have been observed in rheumatoid patients with pneumoconiosis due to other causes. This finding is quite uncommon and the lesions behave and should be treated as other patients with RA and pulmonary nodules.

Rarely, patients with RA may develop an interstitial pneumonitis which can lead to respiratory insufficiency and death. Pulmonary arteritis may occur in some patients along with digital arteritis and Raynaud's phenomenon and may progress to pulmonary hypertension and heart failure.

An increased frequency of pleural effusions, rheumatoid nodules and interstitial lung disease has been seen in RA patients who are smokers. In addition, even though RA is seen more frequently in females, one finds that the pulmonary manifestations are more frequently seen in males. Although smoking may be a

factor in this apparent discrepancy, there may be other unrecognized factors.

The pathogenesis of the pulmonary lesions in rheumatoid patients seems to be deposition of immune complexes in the form of immunoglobulins and complement components in capillary vessels and alveolar walls leading to local inflammation and fibrosis.

Treatment of the pulmonary manifestations of rheumatoid disease is frustrating. The pleural effusions may not need any treatment and may resolve spontaneously. Occasionally patients with respiratory difficulty may need thoracentesis. Those patients who have developed empyema may need decortication. Although corticosteroids have been used in the treatment of rheumatoid interstitial pulmonary disease, the experience is variable. Some patients with early disease have shown significant improvement while others have continued to progress. Rheumatoid nodules generally do not require treatment; but if corticosteroids are used, one can observe gradual decrease in their size. The role of immunosuppressive agents is unclear.

Metastatic Glucagonoma — Rader et al. (page 485).

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Minnesota Medical Association — Committee on Medical Education
Presents
The Fifth Annual Seminar for Continuing Medical Education Directors
"Improving Your Effectiveness as Director of Medical Education"
November 16-17, 1984, Riverwood Conference Center, Monticello

A Memorable Experience

JOAN O'CONNOR*

THE FOLLOWING is a reflection of my experiences this summer working with a rural physician. The experience was very beneficial. I would highly recommend this type of an experience to any student who is serious about achieving a career in medicine.

I am a twenty-year old junior at the College of St. Benedict in St. Joseph, MN, majoring in Psychology and studying pre-medicine. Dr. Michael B. Rath, solo practitioner in Lakefield, MN, gave me the opportunity to see what family practice is all about. Dr. Rath challenged me to work toward the goal of a medical career by offering me the chance to walk through his practice every day for two months this summer.

During this time, I talked with patients and their families about their illnesses and watched them as they progressed. I watched some patients who recovered completely and others who deteriorated day by

day. I learned basic medical procedures; I learned how to examine patients; I assisted in surgery.

To round out my experiences, I spent time at Worthington, MN and Esterville, IA hospitals observing group practice.

The experience I got is invaluable to me. No amount of reading about family practice or a career in medicine could have given me the knowledge of the profession that I received by actually spending time with a physician and his practice. The time I spent talking with patients and other physicians has helped me grow personally, and has clarified my career goals.

This type of an experience would be beneficial to anyone exploring a diverse field such as medicine. Taking a look at the medical profession from within has helped me to realistically look at my career possibilities. I would recommend this type of experience to anyone who is considering a career in medicine.

*Student, Lakefield, Minnesota

MMA Auxiliary Receives Award

The MMA Auxiliary newsletter, the *Minnesota Gopher Scope*, recently was named the Most Outstanding Auxiliary Publication in the Country at the AMA Auxiliary meeting in Chicago. The *Minnesota Gopher Scope* was also recognized as the "Most Improved Publication." Nine judges reviewed 117 publications entered in the competition.

Jacott Re-elected

Dr. William E. Jacott, Duluth family physician, was re-elected by the AMA House of Delegates on the first ballot to a second term on the AMA Council on Medical Education. Six candidates vied for the two vacancies on the Council with Dr. Jacott being the only incumbent re-elected.

Continuing to serve as an AMA delegate from Minnesota, Dr. Jacott is vice chairman of the Council, vice president of the Federation of State Medical Boards, and a member of the Minnesota State Board of Medical Examiners.

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Fellowship in Chemical Dependency University of Minnesota Hospitals and Clinics

JOSEPH WESTERMEYER, M.D.*

THERE ARE over a score of physicians in Minnesota currently devoting all or a major portion of their careers to the C.D. field. Most came into the field a decade or two ago, during their 30s and 40s. Now most of them are in their 50s and 60s. Replacements are not readily in view, since these physicians' expertise has grown with the evolution of the field. We need to train people to replace them. Recently trained people can no longer simply develop with a newly evolving field, since the field is now too complex and advanced to appreciate merely by practical experience and self-teaching.

Over the last decade most graduating medical students and primary care residents have received some training in the C.D. field. For the most part, this training has focused on issues of diagnosis and acute medical treatment. Thorough clinical assessment, family work, counseling, social rehabilitation, primary and secondary prevention, cost-efficacy, principles of effective treatment, specific complications of various drugs, and similar advanced topics have not been adequately covered in these brief training experiences. Physicians need access to skilled physician-consultants for this level of expertise.

Training Activities

Inpatient Service

Coordination of psychiatric and medical services for a ten-bed chemical dependency program within a psychiatric ward; admission histories and physicals and full medical management, including acute detoxification; substance abuse and comprehensive psychiatric diagnostic assessment; leadership of chemical dependency therapy groups; liaison with nursing staff in treatment plan development and implementation; family evaluation, education and treatment; liaison with referral sources, judicial agencies, half-way houses, and other placement sites; medical student orientation and supervision; orientation and consultation to G-2 and G-3 residents.

Outpatient Assessment Service

Participation in comprehensive multidisciplinary

assessment of elective cases referred to the University of Minnesota Chemical Dependency Program for Special Populations; supervision of medical students; staffing of cases with referral to University or extramural programs.

Partial Hospitalization Service

Psychiatric liaison to multidisciplinary staff of Intensive Outpatient Program (day hospital and evening hospital) for patients with dual disabilities, i.e., substance abuse plus a major psychiatric, developmental, or physical disability; two hours per week of direct contact with each patient in the program, including pharmacotherapy management in a group setting; treatment plan development at weekly staff meetings; supervision of medical students, psychology interns, and other trainees.

Outpatient Service

Individual outpatient visits for patients who have completed inpatient or partial hospital treatment for substance abuse; pharmacotherapy, family and supportive therapy; supervision of trainees; lead group therapy sessions.

Consultation Service

Chemical dependency assessments of medical/surgical inpatients at the University Hospitals, with referral to University or extramural programs.

Program Development and Administration

Working with Director of Chemical Dependency Program to develop admission and treatment criteria; prepare educative materials; working with the Program Director and staff to create treatment program for dual disability clients and to organize clinical activities; participate in the recruitment and selection of personnel for inpatient and outpatient programs; supervision of nonphysician staff in making comprehensive psychosocial/chemical assessments.

Teaching

Supervision and teaching of senior medical students and residents in assessment and treatment.

Research

Participate in the preparation and standardization of

*Director, Chemical Dependency Program, University of Minnesota, Minneapolis.

data collection materials; pursuit of individual research project.

Community Liaison

Meet with staff of other chemical dependency programs to discuss mental illness problems and treatment programs available at the University of Minnesota for treatment of mentally ill/chemically dependent patients; conduct workshops for mental health professionals in the assessment and treatment of chemical dependency problems.

Other Training Activities

Formal training activities will include the following:

- assignment of selected readings from texts and journals;
- weekly attendance at C.D. case conference;
- attendance at selected courses and seminars at University of Minnesota;
- attendance at selected conferences away from the University of Minnesota;
- preparation of lectures and training sessions for medical students, residents, practicing physicians, and other practicing health professionals;
- organize and schedule weekly C.D. conference.

Prerequisites and Application for Fellowship, Salary

The candidate will have completed at least three years of post-M.D. residency training in a field of medicine (e.g., family practice, internal medicine, pediatrics, psychiatry, medical or surgical subspecialty), and have one of the following: license to practice medicine in the U.S.; part III of National Board Exams; or ECFMG.

Application should be made to:

Joseph Westermeyer, M.D.
Department of Psychiatry
University of Minnesota
Minneapolis, Minnesota 55455
(612) 373-8102

Acceptance in the fellowship will be decided by Dr. Westermeyer, who will be guided in this decision by an advisory committee of eminent clinicians in the Chemical Dependency field.

Application should include the following:

- medical school record;
- report from residency training director;
- two letters of approval;
- review of candidate's general medical experience, with special reference to experience in the field of chemical dependency;
- statement regarding candidate's health;
- brief summary of candidate's interest in the chemical dependency field.

The stipend includes the following:

- salary for twelve months of \$21,065;
- life and health insurance.

The fellowship must be available on a twenty-four hour basis to back up residents on-call. Vacation is four weeks. Any evening or weekend positions must be cleared by Dr. Westermeyer and the departmental residency committee. No nighttime call between Sunday night and Thursday night will be approved.

This fellowship may be approved for residency requirements depending on the specialty board in which the candidate seeks certification. Certification for a G-4 year following three years in psychiatry can be arranged. Other approvals besides this one would require individual consideration.

University of California

October 16-18, 1984. Primary Care: Selected Infectious Diseases. Kauai, Hawaii. Credit hours: A.M.A. 11½ Category 1. Fee: \$225 to August 15, then \$275. Sponsors: Health Science Seminars and Extended Programs in Medical Education, University of California, San Francisco. Contact: Cynthia Vaughan, P.O. Box 22023, San Francisco, CA 94122; or call (415) 861-2713.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

September, 1984

10-14 47th Annual Radiology Course: Radiology/84 — Thoracic imaging; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

10-21 Second Annual Graduate Occupational Health & Safety Institute; Univ. of MN Medical School; St. Paul-Ramsey; CONTACT: Ruth McIntyre, Assoc. Director, CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980

13-14 Urology Update for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

13-14 Medical Directors Conference; CME Dept., University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-15 Urology Today; St. Paul-Ramsey Medical Center; Sheraton Midway Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

14-15 Current Concepts of Cardiology; Abbott Northwestern Hospital; International Falls, MN; CONTACT: Mary Kaerbitz, Falls Medical Center, Shorewood Drive, International Falls, MN.

14-15 Orthopaedic Nursing in the 80's — New Concepts and Challenges; Metropolitan Med. Center & Hennepin County Med. Center; Pillsbury Auditorium; CONTACT: Rose Jagodzinski, 701 Park Ave. So., Mpls., MN 55415, 612/347-2812.

14-15 Common Problems in Cardiology; Park Nicollet Medical Foundation; CONTACT: Elaine Anderson, 5000 W. 39th St., Minneapolis, MN 55426; 612/927-3703.

15 New Developments in Anxiety Relating to Medical Illness; North Memorial Medical Center; Vance C. DeMong Auditorium, North Memorial Medical Center; CONTACT: Molly Kunding, Dept. of Education, 3300 Oakdale Avenue North, Mpls., MN 55422, 612/520-5455.

17-19 Topics in Geriatric Medicine: Management of Alzheimer's Disease; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

17-19 Triennial International Symposium on Male Sexual Dysfunction; Mayo Clinic/Mayo Foundation, 200 First St. SW, Rochester, MN 55905; CONTACT: William L. Nietz.

18 Smoking & Pregnancy — New Strategies for Health Care Providers; American Lung Association of Ramsey County; Sheraton Midway Hotel, St. Paul; CONTACT: Ruth Pierce/Marty Hamlin, 614 Portland Avenue, St. Paul, MN 55102; 612/224-4901.

19 Impotence and Penile Implants; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20-22 7th Annual Trauma & Critical Care Seminar; University of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

21 Plastic Suturing for the Primary Care Physician; Minneapolis Children's Medical Center; Abbott Northwestern Hospital, Mpls.; CONTACT: Martha Rogers, 2525 Chicago Avenue South, Mpls., MN, 612/874-6206.

21-22 Current Concepts of Cardiology; Abbott Northwestern Hospital; Holiday Inn, Willmar, MN; CONTACT: June Benson, 301 Becker Ave. SW, Willmar, MN 56201

21-22 Advanced Trauma Life Support; University of MN-Duluth Medical School; CONTACT: C. L. Barbee, M.D., 1000 E. First St. — Suite 203, Duluth, MN; 218/727-7259.

22 Current Management of Diabetes; Mount Sinai Hospital; L'hotel Sofitel; CONTACT: Nancy Pasell, 2215 Park Avenue, Minneapolis, MN 55404; 612/871-3700 ext. 1117.

28 Problems in Family Practice; The Duluth Clinic, Ltd; Holiday Inn, Duluth; CONTACT: J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805; 218/722-8364.

28 Advanced Concepts in Cardiac Pacing; Abbott Northwestern Hospital; Registry Hotel, Bloomington, MN; CONTACT: Cheri Galbraith, Minneapolis Heart Institute, 2525 Chicago Avenue, Suite 700, Mpls., MN 55404, 612/872-3900.

28 Northwestern Pediatric Society Meeting; Northwestern Pediatric Society; Chanhassen Dinner Theatre, Chanhassen, MN; CONTACT: Fredric Kleinberg, M.D., Dept. of Pediatrics Mayo Clinic, Rochester, MN 55905; 507/284-2922.

October 1984

3-5 Annual Internal Medicine Review Course: Endocrinology, Cardiology and Hematology; University of Minnesota Medical School, Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

4-5 The Incredible Infant in the Postpartum Period: The Normal Infant, The Handicapped Infant; Abbott Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, Ed. Dept., Abbott Northwestern Hospital, 800 E. 28th Street, Mpls., MN 55407, 612/874-4300.

4-November 2 Advanced Cardiac Life Support Certification; St. Francis Regional Medical Center; Shakopee, MN; CONTACT: Judy Hoff, Ed. Dir. St. Francis Regional Medical Center, 325 West Fifth Avenue, Shakopee, MN 55379, 612/445/2322.

4-13 Advance Cardiac Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Joan Peterson, R.N. 612/932-5419.

8-12 Professionals in Residence; Hazelden Training & Professional Education Dept.; Center City, MN; CONTACT: Hazelden Training & Prof. Education Box 11, Center City, MN 55012; 612/257-4010

11-12 Clinical Nutrition for Practicing Physicians; University of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

11-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

12 6th Annual Adolescent Medicine & Health Care Conference: Adolescent Sexuality; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

12-14 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

13 Current Trends in Ophthalmology — 8th Annual; Mount Sinai Hospital; Hotel Sofitel, Bloomington; CONTACT: Nancy Pasell, Mount Sinai Hospital, 2215 Park Avenue, Mpls., MN 55404; 612/871-3700, Ext. 1117.

13 Topics in Clinical Psychiatry; Minnesota Psychiatric Society & Mayo Clinic, Dept. of Psychiatry; Rochester; CONTACT: Norman P. Hanson, M.D., 200 First St. SW, Rochester, MN 55905, 507/284-4155.

15-19 Practice Management Program: Marketing Strategies; Minnesota Medical Association; Grand Rapids, Detroit Lakes, Mankato, Marshall, St. Paul; CONTACT: Eugenia Kassar, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414; 612/378-1875.

17-19 10th Annual Meeting; Minnesota Perinatal Organization, Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, 420 Delaware St., Mpls., MN 55455, 612/373-5718.

17-20 Principles of Colon and Rectal Surgery; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware Street, SE, Mpls., MN 55455; 612/373-8012.

18-20 The 17th Annual Orthopaedic & Trauma Seminar; Hennepin County Medical Center, Pillsbury Auditorium, 701 Park Avenue So., Mpls., MN; CONTACT: Ramon B. Gustilo, M.D., 701 Park Ave. So. 813, Minneapolis, MN 55415.

24-26 Annual Autumn Seminar in Obstetrics & Gynecology; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455; 612/373-8012.

25-27 Emergency Medicine for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical School; CONTACT: Ruth K. McIntyre, Assoc. Dir. CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

26-27 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN. CONTACT: Kari Ebert, 612/221-3991.

26-27 Current Clinical Cardiology; United Hospitals of St. Paul; Landmark Center, St. Paul; CONTACT: Eleanor Waldrup, United Hospitals, 333 No. Smith, St. Paul, MN 55102; 612/298-8558.

27-28 Update in Cardiology; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

29-31 Clinical Reviews; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

31 Infections in the Elderly; Hennepin County Medical Center; Minneapolis, MN 55415; CONTACT: R.B. Breitenbucher, M.D., 701 Park Ave. So., Mpls., MN 55415; 612/347-2323.

November, 1984

2 Neurology Today — 1984; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

9 E. T. Bell Institute of Pathology, Department of Laboratory medicine and Pathology, University of Minnesota will present, Annual Fall Symposium, "Current Concepts in Gastrointestinal Pathology," Mayo Memorial Auditorium, University of Minnesota, Minneapolis. CONTACT: CME, University of Minnesota, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455. (612) 373-8012.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge \$10.00, key number, \$2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

FAMILY PHYSICIAN wanted, board certified or eligible, to join two young family physicians in a growing family practice group. New facility. Northfield is a small attractive college town (St. Olaf and Carleton) and is less than one hour from the Twin Cities and Rochester. Contact: Kenneth Sansome, M.D., or David Larson, M.D., Family Physicians of Northfield, 505 W. Woodley, Northfield, MN 55057; (507) 663-1261.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Currently recruiting for Board Eligible or Board Certified Internist, preferably with subspecialty training and also a Board Eligible or Board Certified Ophthalmologist. Contact Administrator at (218) 751-1280 Bemidji, Minnesota.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

FAMILY PHYSICIAN, INTERNIST, SOUTHWESTERN MINNESOTA Rural Primary Care Group — 12 physicians (8 Family Physicians, Internist, 2 General Surgeons, Pediatrician) in an Agricultural-Commercial-University town of 11,000 invites residency trained/board certified Family Physician and Internist to join progressive patient-oriented practice in a recently built hospital and ambulatory care center. USUAL CHAMBER OF COMMERCE CLAIMS NEARLY TRUE HERE! C. P. Martin, M.D., Doctors' Plaza, Marshall, MN 56258; Phone: (507) 532-9631.

WANTED: OB-GYN, family practitioner and internal medicine to join multi-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent. Many fringe benefits included. Write MINNESOTA MEDICINE (742) 2221 University Avenue, S.E., Suite 400, Minneapolis, Minnesota 55414.

12 DOCTOR, YOUNG PROGRESSIVE clinic (10 F.D.'s, 1 surgeon, 1 internist) in Forest Lake, Minnesota, 30 miles north of Minneapolis-St. Paul seeking pediatrician to join group. Large young-patient population. 52-bed hospital located across from clinic. Salary negotiable. Contact Dr. Beck or Dr. Sill at (612) 464-7100 for further information.

BUSY FAMILY PRACTICE needs Associate, with early partnership considered. Well equipped 15 room Clinic on main street. Cannon Falls offers a 25 bed hospital (district approved bond issue for one million dollar expansion to start in April), 88 bed nursing home. One other clinic in town. We have a large drawing area. Cannon Falls offers excellent recreational facilities, and location is on Cannon River between the Twin Cities and Rochester on Highway 52. Contact Lloyd H. Klefstad, M.D., Box 98, Cannon Falls, Minn. 55009. Telephone 507-263-3545, or 263-4258.

(Continued on page 524)

Classified Advertisements

(Continued from page 523)

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

12 DOCTOR, YOUNG PROGRESSIVE clinic (10 F.D.'s, 1 surgeon, 1 internist) in Forest Lake, Minnesota, 30 miles north of Minneapolis-St. Paul seeking obstetrician to join group. Large young-patient population. 52-bed hospital located across from clinic. Salary negotiable. Contact Dr. Frank at (612) 464-7100 for further information.

FORTY-THREE PHYSICIAN, multi-specialty clinic in Minneapolis area desires an additional orthopedic surgeon for expanding practice. Excellent salary and fringe benefits. Must be board certified or board eligible. CONTACT: ALLEN W. DELZELL M.D., 6341 University Ave. N.E., Fridley, MN 55432, 612-571-0457.

PERSONAL PROPERTY APPRAISAL SERVICE — Antiques, Art Objects, Residential & Office Contents, including Early Medical Instruments. Confidential. Member: International Society of Appraisers. For details write or call Henry Swiggum, 13 Lincoln Ln., Northfield, Mn. 55057 (507) 645-5335.

GROUP HEALTH, INC. seeks associates in *Allergy, Cardiology (non-invasive), Pediatrics, Family Practice, Internal Medicine, Obstetrics/Gynecology, Ophthalmology, Adult and Child Psychiatry, Urgent Care*, and *half-time family practice*. Contact: Paul J. Brat, M.D., Medical Director, 2829 University Avenue Southeast, Minneapolis, Minnesota 55414, (612) 623-8445.

FAMILY PRACTICE PHYSICIAN — Wanted to join a 16 physician multi-specialty group in Robbinsdale, Minnesota, located next to North Memorial Medical Center. Fringe benefits are excellent and salary is very competitive. A second satellite office is also located in Maple Grove. The clinic is also a provider for three HMOs. Please contact clinic manager at North Clinic, P.A., 3210 Lowry Avenue North, Robbinsdale, Minnesota 55422, telephone (612) 588-4625.

OCCUPATIONAL MEDICINE specialty position available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

PHYSICIAN WANTED to take over established clinic practice. Owner retiring in one year or less. Family and industrial practice. Board eligibility required by one hospital, others open. Contact E. C. Emerson, M.D., 806 East 7th Street, St. Paul, MN 55106 (612) 776-2744 (office) or (612) 426-5287 (home).

PHYSICIAN OPPORTUNITIES available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

FAMILY PRACTICE PHYSICIAN for rural Minnesota. A progressive network of Minnesota clinics now has opportunities for family practice physicians in Western Minnesota. These positions offer the highest level of creative health care and a secure financial future in rural settings. High quality of life. Many outdoor recreational opportunities, winter and summer. Call Willmar Medical Clinic, 612-231-5000, Dr. P. Olson.

JASPER, MN SEEKS BE family practitioner following death of established solo physician. Practice currently has 1350 active files, admitting patients to nearby Pipestone and Sioux Falls hospitals. Call shared with Pipestone physicians. Community (population: 700) exhibits strong loyalty to local M.D. Contact David Smith, % Jasper State Bank, 121 West Wall, Jasper, MN 56144 (507) 348-3051

FAMILY PRACTITIONERS — Excellent opportunity to work with well established Family Practitioner/General Surgeon, in the beautiful lakes country of Southwest Minnesota. Delightful community of 12,000 with excellent schools and a new 64-bed hospital. Comfortable, friendly lifestyle with good professional support. Marshall Medical Clinic 1104 E. College Drive Marshall, MN 56258.

Classified Advertisement

ORTHOPAEDIC SURGEON: Cambridge, Minnesota: 45 minutes from downtown Twin Cities: beautiful recreational area: good schools: new hospital: excellent opportunity for board certified orthopaedic surgeon to join 17-man multispecialty group, including one existing orthopaedic surgeon: 1st year salary +; 2nd year partnership available: please contact Administrator Al Nelson at 612/689-1411, Minneapolis 612/434-6622, or Home Phone 612/396-2504."

OB-GYN: BOARD CERTIFIED OR ELIGIBLE PHYSICIAN
Progressive and young multi-specialty group practice in St. Cloud is presently recruiting an additional OB/GYN physician. Three board-certified OB/GYN physicians in the group practice presently. This is an excellent career and financial opportunity for an OB/GYN physician who practices quality medicine and likes a group practice atmosphere. St. Cloud is an excellent community with three colleges and an abundance of recreational and cultural activities. If interested, call collect: Nelson Sirlin, M.D., or Daryl G. Mathews, Administrator — telephone number (612) 251-8181. Or address inquiries and curriculum vitae to: Nelson Sirlin, M.D., St. Cloud Medical Group, P.A., 1301 West St. Germain Street, St. Cloud, Minnesota, 56301.

ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

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(Continued on page 526)

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(Continued from page 525)

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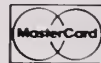
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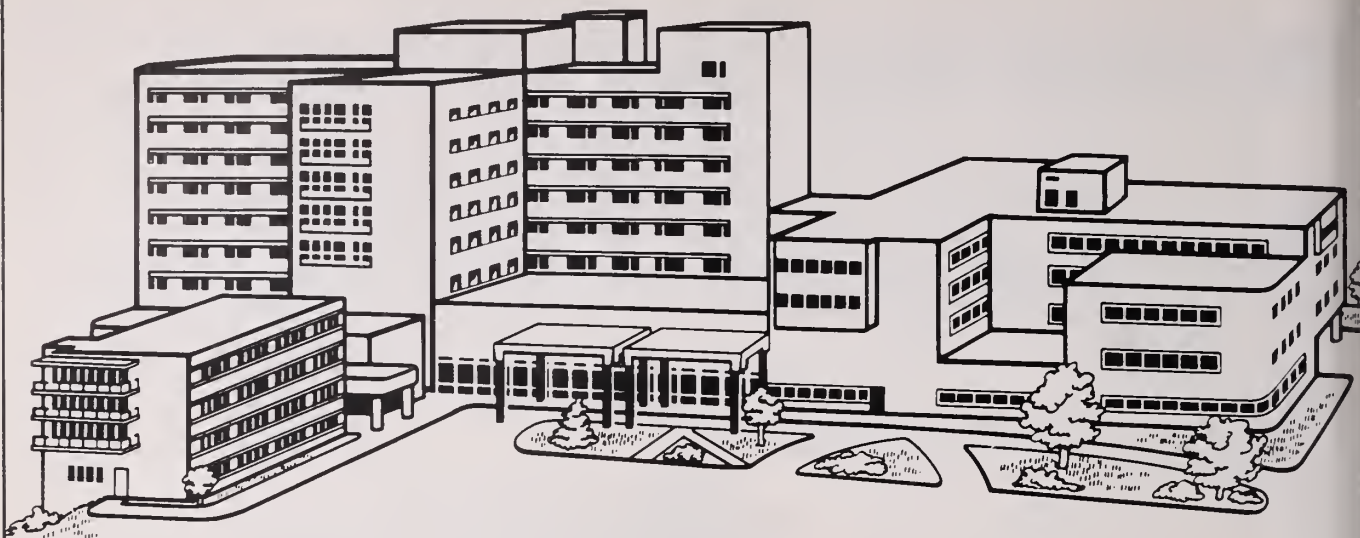
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Authors: Send manuscripts, subscriptions and communications for consideration to MINNESOTA MEDICINE, 2221 University Ave. S.E., Suite 400, Minneapolis, MN 55414. Telephone (612) 378-1875.

All manuscripts will be edited and stylized to conform to the format used in MINNESOTA MEDICINE.

Advertisers, Readers and Reviewers: The Editors reserve the right to reject material submitted for reading or advertising columns. The views expressed in this journal do not necessarily represent those of the Minnesota Medical Association, its editors, nor any of its constituents.

Annual Subscription — \$18.00. Single copies — \$2.00
Canadian — \$30.00. Foreign — \$30.00.

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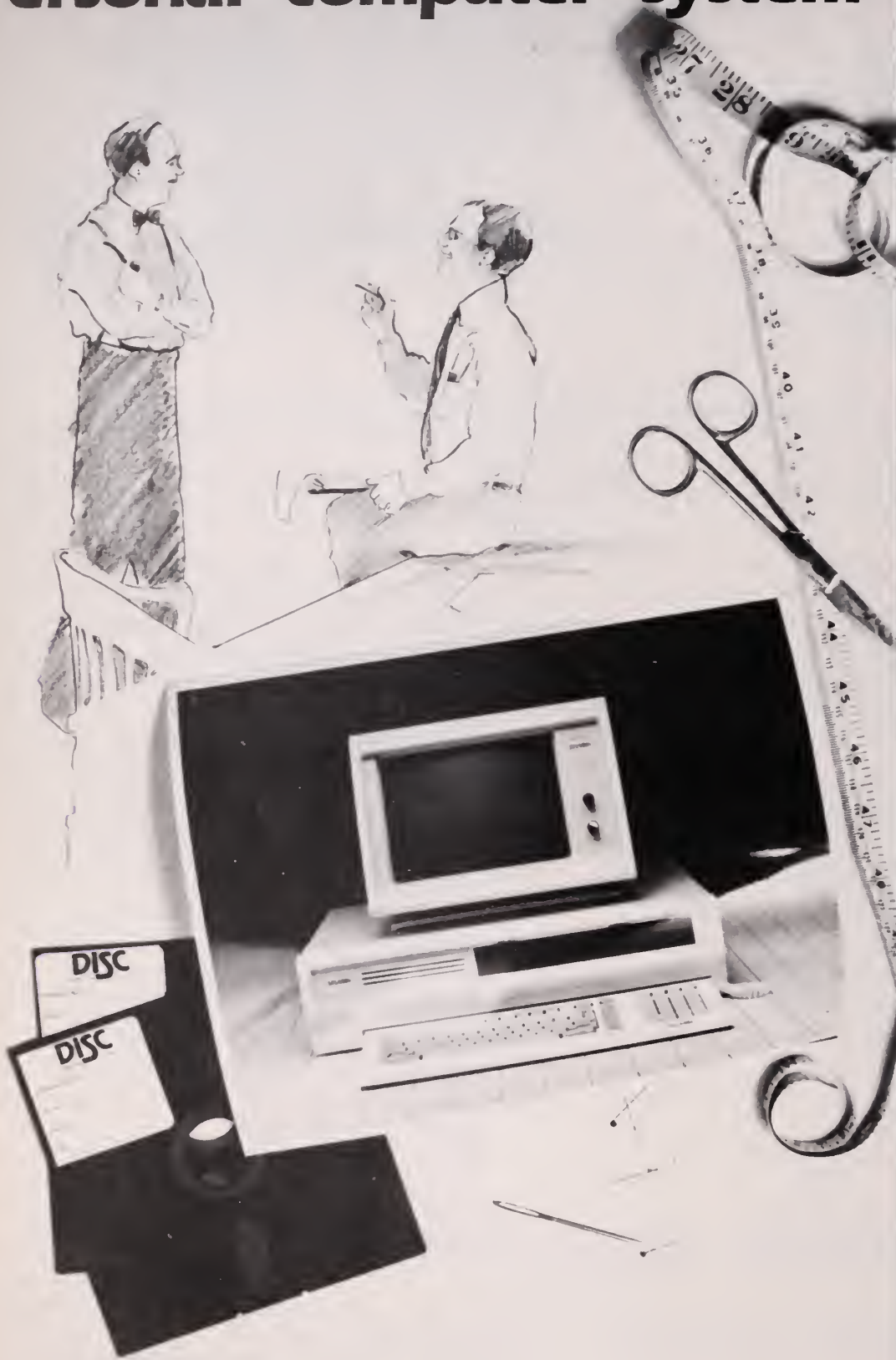
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President's Letter



“Our Brothers’ Keepers”

All of us, in our practice lifetime, will be touched not once, but many times, by colleagues who become alcoholic or drug-dependent, become physically ill with strokes or Parkinson's disease, suffer the ravages of time, or become psychiatrically ill.

If we, as physicians, don't care for our ailing brothers, who will? There is a need to help the physician and his family. There is a need to protect his patients and our profession. For those who recover, there is a need for compassion and acceptance to help that physician return to his practice.

Professional liability exposure increases for medical staffs and partners who don't protect their patients from an impaired physician.

There are approximately 560 physicians impaired by alcohol alone in Minnesota. Each impaired physician has, on the average, four family members that become secondarily impaired. Add to that approximately 560 spouses that in turn impair their physician partner.

To date, our Impaired Physicians Committee has worked with 218 physicians. It should be emphasized that our role is an advocacy approach, i.e., to prevent loss of licensure — to intervene early.

Clues to Impairment in the Physician*

Home and Family

Medicinal use of alcohol or drugs
Behavior excused by family and friends
Drinking or using activities come first
Children neglected, abused or in trouble
Fights, arguments and violent outbursts
Sexual problems
Withdrawal, isolation and fragmentation
of individual and family
Financial crisis
Separation or divorce

Office

Drowsiness or falling asleep during patient
interview
Workaholic early

Physical Status

Multiple physical complaints and illnesses
Many prescriptions for self and family
Frequent ER visits and hospitalizations
Frequent accidents
Personality and behavior changes
Inappropriate tremulousness or sweating
Poor hygiene and appearance
Depression
Mood swings-bright and cheery to
argumentative

Hospital

Often late, absent or ill
Decreased work/chart performance
Inappropriate orders

*From Whitfield CL & Bissell L: Treatment of special population groups (with modification). In Whitfield CL(ed): The Patient with Alcoholism & Other Drug Problems, Year Book Medical Publishers, Chicago, in press for 1981.

PRESIDENT'S LETTER

Office (continued)

Disorganized schedule
Unreasonable behavior
Inaccessible to patients and staff
Excessive drug use, prescriptions and supply
Patient complaints
Frequent absences
Decreased workload and tolerance
Odor of alcohol

Employment Applications

Frequent job changes or relocations
Unusual medical history
Vague letters of reference
Inappropriate qualifications

Hospital (continued)

"Hospital gossip"
Unavailability
Heavy drinking at staff functions

Friends and Community

Personal isolation
Embarrassing behavior
Drunk driving arrests
Legal problems
Neglected social commitments

If you know of a physician or a family member of a physician who needs confidential help with an alcohol or drug problem, or some other impairment, call (612) 378-1875 and ask to be referred to the Impaired Physicians Committee.

For additional confidential help, families or physicians can call P.S.P., or Physicians Serving Physicians, at (612) 339-1230. This is a group of AA physicians for those who have a special problem with alcohol or drugs.

Don't be an enabler enabling your brother to get sicker under the mistaken impression you are helping him. If he/she had cancer, would you advise him/her to wait until it really got bad? Get them to help. We are our brothers' and sisters' keepers!

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

Cover Photograph

"Sunrise in the Mist"

The cover photograph was taken by Dr. James D. Roelofs at sunrise in late October on Little Boot Lake near Bemidji, Minnesota. He used a Nikon SLR camera and Kodachrome 64 film.

Dr. Roelofs is director of radiology and former president of the medical staff at St. Joseph's Medical Center in Brainerd, Minnesota. He practices with the radiology group of Diagnostic Imaging Associates in Bemidji.

A graduate of the Medical School of the University of Iowa, Dr. Roelofs came to Minnesota in 1971 practicing in Cass Lake at the Indian Health Center. He enjoys photography and woodcarving.

The March, 1981 cover of MINNESOTA MEDICINE "Great Lakes Freighter" was taken by Dr. Roelofs.

Cover Slides for Minnesota Medicine

We are looking for winter and spring scenes for covers for MINNESOTA MEDICINE. Please send your vertical 35 mm slides to me at the Southdale Medical Center, Suite 225, Edina, MN 55435.

Bruce Nydahl, M.D.
Cover Editor



Editor's Notebook

Corporate Transformation of Medicine in Minnesota: Deeper Thinking and Lower Lobbying or, Business Attitudes Towards Medicine in A Political Year

Seventh in a Series

The Causes of Health Care Inflation

- "Free Lunch" System —
 - ✓ Consumer Insulated from Cost
 - ✓ Provider Insulated from Cost
- "Best is Most" Syndrome
 - ✓ 30% Excess
- Hidden "Taxes"
 - ✓ \$40 M 1981 Twin Cities Cost Shift
- Technology "Arm's" Race

From a slide used by Robert Rynearson, Chairman of the Board, Minnesota Coalition on Health Care Costs, and Vice-President, Honeywell Corporation

"Q: You have spent perhaps more time than any other chief executive officer of a large private corporation in America grappling with this problem of health costs. If you were addressing your corporate brethren on this subject, particularly those who are wading into this volatile sphere for the first time, what advice would you offer them?"

"A. I'd tell them that the conclusion I have reached is that corporations must be prepared to use the clout that comes with paying the bill for medical services if it is going to affect change. Initially, we attempted to effect change through negotiation, discussion, debate, through participation of all of the interests with a vested economic stake in health care delivery . . . That process has taken years and years and has taken us only so far. I am now convinced we should have been more aggressive, more demanding, and been willing to insist upon quicker responses and faster action."

"Big Business and Health Care in the Heartland: An Interview with Robert Burnett," Chief Executive Officer, Meredith Corporation, Des Moines, Health Affairs, Volume 3, Number 1, Spring, 1984

ST. PAUL — As I jot down these words, I am couched deep in thought in the lower lobby of the St. Paul Radisson Hotel. Scarcely twenty feet away, David Broder, political pundit for the *Washington Post*, sits perched on another couch. I'm here to talk before the Council of State Planning Agencies, an organizational creature of the National Governor's Conference.

What am I thinking? Well, I am thinking if this guy Broder can wax profoundly on politics, why can't I? And I am thinking this is a political city; this is a political year; and this is a hotel teeming with political activity.

For the last three days, a handful of State Governors and their advisors have been meeting at the Radisson to decide what to do about economic problems of States. And today the nation's leading black leaders — Andrew Young, Maynard Jackson, Coleman Young, Jesse Jackson, Julian Bond, and Coretta King — are meeting right here in River

City in a room off the lower lobby to decide what to do *for* or *about* Walter Mondale.

A Political Piece

So why not, I am asking myself, do a political piece? Why not tell you what I'm doing here in the political pits. And why not use some existing polls to illustrate what others, particularly businessmen, think about the current health care situation? More and more, businessmen are forming coalitions to do the social dirty work of lowering health care costs for politicians. What these coalitions do to reduce costs may make what the government has done seem like child's play.

In Iowa, where a powerful business coalition, Health Policy Corporation of Iowa (HPCI), has been throwing its weight around for two years, total hospital admissions are down this year 10%, while the national average is down just 2%. In 1982 and 1983 in Minnesota, where the Minnesota Coalition on Health Care Costs has now been operating since 1981, hospital admissions were also down by 10%, and the percent increase in per capita hospital expenditures in Minnesota in 1981 and 1982 was 7.2, the lowest of all 50 states.¹

These utilization-cutting and cost-cutting trends are not solely the work of coalitions. The government, HMOs, and the competitive models have all played their roles. But with coalitions serving as the catalysts, business executives are putting into place the social machinery to ratchet down health care costs.

Deep Thinking in St. Paul

I do my deepest thinking in St. Paul. Let me explain why. Fifteen years ago, I attended a post-opera party at a St. Paul mansion. The hostess, learning I came from Minneapolis, said: "You have more parties in Minneapolis, but we have much more depth." Her depth perception astonished me. Deep down, I felt shallow. I resolved to think deeper in St. Paul in the future. Anyway, I knew she had uttered a deep truth because I'm still struggling to decipher what she meant.

Her remark comes back to me now because my ischial tuberosities are sunk deep into one of those puffy vinyl couches — the kind that provide an orthopedic stress test when their unwitting captives try to rise. Now that I am trapped in this deep couch, I might as well talk a little politics and a little business. First, politics.

Lower Lobbying

As I see it, I am performing a little lower lobbying for the physicians of the Minnesota Medical Association. I have just emerged from a two hour study group session with health and economic advisors to the Governors of the various states. I was the only physician participating. But a Governor, John Sununu of New Hampshire, of Finnish descent, attended. He was bright, attentive, and tenacious in his comments and questions. I was impressed by what he contributed and the way he hung in there, and I said to my tablemate: "The man is in this from start to finish."

These advisors at our session are members of the Council of State Planning Agencies, which, in turn, are a sidegroup of the National Governor's Conference. They are congregating in St. Paul to discuss: "An Economy in Transition: Developmental Strategies of the States."

A Resource Person

Because of the editorials I have written on the Industrialization of Medicine in Minnesota, I am here to serve as a "Resource Person" on the subject of "The Health Care Industry and State Economic Development." Being a Resource Person was pretty heady stuff for me, but in my current deep position, I now feel qualified to discuss almost anything, although I cannot rise to defend my position.

Major Issues As Seen by Governors' Advisors

Our discussion group of 30 people, after two hours of talk, decided these five major issues were most likely to surface in Governors' offices and State legislatures:

1. State Regulation of Insurance. The advisors foresaw that: a) because of the exploding elderly population and declining Medicare benefits, long-term health care insurance would become a major industry; and b) because of surging health care costs and their impact on industries' competitive positions, self-insurance by corporations would become commonplace. Both long-term insurance for the elderly and self-insurance by corporations, I was told, invite abuse and therefore should be regulated by the States.

2. Business Coalition Confrontations with the Health Care Industry in the State Legislatures. These confrontations have already flared in California, Arizona, Iowa, Michigan, and Florida. Furthermore, legislative bodies in New Jersey, Connecticut, Maryland, Massachusetts, and New York have already passed regulatory reforms.

Why is this? *Mainly because of the massive cost shifts from government to private patients.* Cost shifts are now estimated at over \$50 million in the Twin Cities, over \$500 million in California, and over \$5 billion nationally. Health care cost increases for private industry surged from 3-4 percent to 10-12 percent of gross labor costs in 1981 alone.

3. Health Care Data Collection and Distribution. In the new age of Diagnosis-Related Groups, Professional Review Organizations, and other broad-based Federal, State, and Industry cost-containment programs, those in the know acknowledge that those who control the data control the system. Perhaps that is the reason the man next to me, a representative of the Health Data Institute, Inc, contributed so much to our discussion. His organization has developed an Appropriateness Evaluation Protocol and other "objective audits" to control utilization of resources and "quality" of care.³

4. Malpractice Insurance as a Health Care Cost Issue. The Florida Medical Association is now engaged in a multimillion dollar campaign to introduce a malpractice control act as a referendum on this year's ballot. Society badly needs legislation to control malpractice cases. From 1978 to 1983, malpractice activity in the United States increased from 3.3 claims per 100 physicians to 8.0 claims. Claims against surgeons rose from 4.8 to 11.8 per 100 physicians. Jury awards escalated four to five times from the mid-seventies until now. What is sad about these figures is that a mere 18 percent of malpractice premiums go to injured patients. The rest goes to running the system.

5. Positive and Negative Aspects of Health Care Development as a Business Climate Issue.

First, the positive. In Minnesota, Governor Perpich has seized upon the idea of using Minnesota's high-technology medical firms, our medical educational establishment, and our prepaid medical management firms as the core of Minnesota's "Medical Alley," thereby hoping to make Minnesota the Silicon Valley of Health Care. Perpich is saying: let's go entrepreneurial with our medical, organizational, and technology skills. This makes enough sense that a catalogue of over 370 medical, biotechnical, and health care companies is being printed, and even a newsletter *Medical Alley Update* (annual subscription rate \$96) has appeared.⁴

But an ominous downside lurks beneath current health care control efforts. What happens to the losers? Until now, prepaid plans have been strictly for the middle class. What happens to the poor, the ill, and those who require intensive care in tertiary hospitals? What happens to teaching institutions, who must frequently bear the burden of the care for the dispossessed? What happens when rural hospitals, often the biggest employer in town, go under? What happens to unemployed health care professionals?

These are questions society will have to think about, and the answers will have to come at the State level, for the States will bear the burdens of taking care of the losers. One significant impact of the Reagan Administration's New Federalism is that it has effectively shifted welfare burdens from the Federal to the State level.

Growth of Business Coalitions

For a combination of reasons — uncontrolled health care costs, the emergence of health care as American industry's single most costly fringe benefit, the business view of health care costs as an irrational process, the massive "cost shift" from public to private patients, and the decreasing competitiveness of American corporations against foreign industries — business coalitions are sprouting like weeds across the country. At least 167 now exist, and two-thirds of these are less than three years old.

Unlike the Minnesota Coalition on Health Care Costs, set up at the initiative of the Minnesota Medical Association and composed of a cross-section of society, business dominates many new coalitions. The style of the Minnesota Coalition is non-confrontational towards physicians. But this is not necessarily so elsewhere. Indeed, twenty coalitions have only business members. Employers, with 80 percent of total members, make up most of the members of health coalitions. Only 11 percent of coalition members are providers or insurers. Few true coalitions — groups composed of many factions with different perspectives — exist. For good reason, too, for as someone has observed: "Coalitions are the most fragile invention ever conceived by man."

Despite the inherent fragility of coalitions, the Minnesota Coalition on Health Care Costs has functioned well and performed effectively. It has been in operation for more than four years and is considered a model by the rest of the country. This may be because it was started by the Minnesota Medical Association, has a broad based group of participants-physicians, hospital administrators, trustees, third party payers, and government, health planning and consumer representatives, and has taken the perspective of purchasers as the point at which to exert leverage over the system. The Coalition has helped create competition, has demanded cost effectiveness, and has built on community consensus around a market strategy rather than a regulatory approach. To keep its wheels rolling and its constituencies informed, the Coalition has an annual budget of \$312,000, relies on a 30-member board, has a staff of seven, and has published 16 different documents during its existence.

Unfavorable Trends and Uncertainty

Why businessmen are dominating coalitions is clear enough — the inexorable trend of health care costs, businesses' inabilities until now to control these trends, and the uncertainties of the future consequences of these trends. Like the stock market watchers, there are two things businessmen dislike — unfavorable trends and uncertainty. In the last three years, health care costs for employees have been exploding at the rate of 15 to 30 percent a year. By 1983 American industry was spending \$77 billion on group health benefits, more than 75 percent of the private health insurance market.

What Businessmen are Saying

To give you an idea of what business representatives are saying, here is a sampling from three of them.

- Jack Shelton, manager of the Employee Insurance Department of Ford Motor Co., speaking at a Duke University Private Sector Conference, said automobile makers are competing with foreign companies who have an edge in production costs, wages, and fringe benefits. He said Ford's health costs are six times greater than the Japanese and added: "Six times higher — and that's including the government's share of the cost and their benefit package is very comprehensive in Japan . . . So I close by saying that we've got to deal with the problem."⁵

- Joseph Califano, Director of Chrysler Corporation and Chairman of the Chrysler Board of Directors Committee on Health Care, made these comments in a recent speech: "In 1984 Chrysler's health care costs will exceed \$400 million, making the Blues Chrysler's single largest supplier. That's more than \$1.2 million each day. This year

Chrysler's total health bill (which includes Chrysler's Medicare payroll tax and a portion of the health insurance premium to its suppliers) will exceed \$550 for each car we sell . . . This year Chrysler must sell about 70,000 vehicles just to pay for its health care bills. Excessive health care costs are eroding America's ability to compete with foreign companies. What does Chrysler get for its health care dollar? A health care industry that is expensive, wasteful and inefficient."⁶

• Donald Melville, Chief Executive Officer for Norton Company which employs 20,000 people, in a speech before the National Governor's Association on July 29, 1984, had these comments: "Our largest facility, employing 3,300, is in Worcester, Massachusetts. Worcester has the third highest hospital costs per resident of all major stand metropolitan statistical areas in the United States. In addition, Boston, which is a mere 45 miles to the east of Worcester, leads the field with the nation's highest hospital costs per resident. Comparing Worcester with other centers offering fine health care for their residents, we find that Worcester's hospital costs are 66 percent higher than those of Rochester, New York, and more than 100 percent higher than those of Seattle, Washington . . . Not so long ago, we estimated that if our profits continue to grow at the then current rate and if health care costs continued to do the same — before the end of the century, health care costs for this one location would eat up all our worldwide profits."⁷

Gulf between Business Executives and Physicians

What disturbs me is not the growth of business coalitions, but the increasing hostilities and wide gulfs of opinions between business leaders and physicians. And why shouldn't I be disturbed? After all, the world of business and medicine have shared the philosophical ties of free enterprise, self-reliance, and independence from government.

But under the stress of skyrocketing health care costs, the philosophical ties are unraveling. Here, to illustrate the point, are the results of a 1983 Louis Harris Poll. The poll reflects the opinions of corporate benefits officers and physician leaders about the need for changes in the health system, the recommended changes, and the acceptability of various methods to reduce costs. Note the gulf of opinions.

Need For Change In The Health System

Need for Change	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
On the whole, the health care system works pretty well, and only minor changes are necessary to make it work better.	12%	68%	56%
There are some good things in our health care system, but fundamental changes are needed to make it work better.	79	32	47%
The American health care system has so much wrong with it that we need to completely rebuild it.	8	—	8%
Not sure	1	—	
Total	100%	100%	
Recommended Change	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
Control or limit costs	18%	8%	10%

Need For Change In The Health System

Recommended Change (Continued)	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
Public education regarding medical programs and costs	12	13	1
Less government interference/regulation	2	15	13
People should pay more of the cost of health care	6	8	2
Better insurance coverage, reevaluate coverage	4	6	2
Change fee-for-service system to capitation/prospective payment	4	2	2
All other responses ^a	54	48	6
Total	100%	100%	

Source: Louis Harris and Associates, Inc., *The Equitable Health Survey, Options for Controlling Costs*. (The Equitable Life Assurance Society, August, 1983).

Acceptability Of Selected Cost-Containment

	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
Insurance plans that offer incentives to people who practice health and safety procedures — such as nonsmokers, seatbelt users, or those who are not overweight			
Very acceptable	45%	75%	31
Somewhat acceptable	34	22	12
Not very/not at all acceptable	20	2	18
Health insurance in which patients who use physicians and hospitals selected by the plan pay a lower share of the cost of services than patients who choose doctors and hospitals not on the list			
Very acceptable	24	6	18
Somewhat acceptable	45	35	10
Not very/not at all acceptable	31	58	27
Requiring patients to pay a greater part than they now pay of all their medical bills covered by their health insurance to encourage them to watch their medical expenses			
Very acceptable	49	48	1
Somewhat acceptable	36	34	2
Not very/not at all acceptable	14	17	3

Acceptability of Selected Cost-Containment (cont.)

	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
In the case of nonemergency surgery, requiring the patient to get a second opinion from another doctor to find out if the surgery is necessary			
Very acceptable	64	27	37
Somewhat acceptable	29	36	13
Not very/not at all acceptable	6	37	31
Utilization reviews conducted by third-party payers to discourage the use of expensive and/or inessential procedures			
Very acceptable	57	15	42
Somewhat acceptable	36	37	1
Not very/not at all acceptable	6	47	41
	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
A system in which the patient has to obtain from the insurance company payment approval for specific expenses and length of hospitalization prior to nonemergency hospitalization			
Very acceptable	38	7	31
Somewhat acceptable	38	27	11
Not very/not at all acceptable	23	66	43
A health plan where, for a monthly fee paid in advance, you receive physicals, doctor's visits, and hospitalization no matter how often you use these services			
Very acceptable	25	6	19
Somewhat acceptable	42	31	11
Not very/not at all acceptable	33	61	32
A system in which the fees paid to doctors and hospitals for treating all patients with particular types of diagnoses are fixed			
Very acceptable	26	6	20
Somewhat acceptable	50	26	24
Not very/not at all acceptable	23	67	44
Changing antitrust laws to allow third- party payers to join together to negotiate with hospitals to cut costs and seek lower charges for their policyholders			
Very acceptable	56	13	43
Somewhat acceptable	32	34	2

Acceptability Of Selected-Containment Initiatives (cont.)

	Corporate Benefits Officers (N = 250)	Physician Leaders (N = 100)	Gulf of Opinion
Changing antitrust laws to allow third-party payers to join together to negotiate with hospitals to cut costs and seek lower charges for their policyholders			
Not very/not at all acceptable	9	52	43
A system that discourages a hospital from having expensive equipment and specialists, if they are available at another hospital nearby			
Very acceptable	54	18	36
Somewhat acceptable	30	33	3
Not very/not at all acceptable	15	47	32
Business and employers in particular cities or areas working together in health care coalitions to reduce costs			
Very acceptable	69	37	32
Somewhat acceptable	30	48	18
Not very/not at all acceptable	1	15	14

Source: Louis Harris and Associates, Inc., *The Equitable Health Survey, Options for Controlling Costs*. (The Equitable Life Assurance Society, August, 1983).

Meaning of Movement

What is the meaning of the business coalition movement?

First, at the most elemental level, it means corporate executives are mad as hell about health care costs — mad enough to go to self-insurance programs, mad enough to encourage employees to join pre-paid plans, mad enough to devote considerable resources to study practice variation among physicians, and mad enough to set up hospitalization reviews for their employees, mad enough to set up coalitions of government, business, labor, insurance, and senior citizens to take on the medical profession.

The latter is what happened in California in 1982, when the "Roberti Coalition" pushed through bills in the state legislature that created a Medi-Cal Czar and put Medi-Cal patients out for hospital and physician bids. State budgetary pressures, the activated business coalitions, and insurance companies dealt a crushing defeat to the California Hospital Association and California Medical Association. When the bills were signed on June 21, 1983, Governor Brown declared: "The reforms adopted this year are the boldest changes in the medical industry in 50 years. It finally introduced competition into the marketplace in the world of health care."⁸

Second, at a less visceral level, executives are convinced the current health care system is simply not "rational." This conviction is reflected in the lead quote to this editorial. Robert Rynearson, Vice-president of Honeywell and head of the Minnesota Coalition on Health Care Costs, says in his standard speech that the causes of the current massive cost shift of health care costs from the public to the private sector, are: (1) the insulation of consumers and providers from cost; (2) the 30 percent "fat" in the system; and (3) the high technology "arms" race between hospitals and physicians. To remedy this irrational system, driven by perverse incentives, he and the Coalition would like to see a re-structured, market-oriented system with a minimum of regulatory controls.

Third, corporation executives are in the mood to challenge the mystique and autonomy of physicians on a price-sensitive basis. This mood is reflected in this recent *Wall Street Journal* squib: "Doctors face fee negotiations, up front Pillsbury Co. signs for a service that monitors reasonable and customary fees, then discusses them with physicians and hospitals before the patient is treated." No longer do executives buy our argument that each patient is unique with a unique set of problems being treated by a physician with a unique understanding. Now, instead of treating patients as a whole, we are expected to split them into 468 categories and to bid for each category at the lowest price. No longer are corporations likely to accept the "practice style variations" that cause tremendous differences in operative rates, treatment intensity, procedure tallies, and cost expenditures.⁹

Fourth, businessmen stand ready to put into place fundamental and comprehensive social reforms to rein in health care costs. Here is the Minnesota Coalition on Health Care Costs laundry list of strategies:

Strategies

1. To bring together inter-organizational alliance.
2. To encourage positive incentive oriented changes
 - a. Reduce inappropriate demand
 1. Plurality of competitive health plans and practices
 2. Price and information disclosure
 3. Restructured benefit policies
 - b. Eliminate barriers to a free market approach
 1. Monitor current health legislation
 2. Existing legal and programmatic barriers.
 3. Impact on current policies and practices.
3. To monitor trends in health service costs.
4. To educate consumers
 - a. Alternative forms of health care financing and practices.
 - b. Health promotion activities and opportunities
5. To educate providers in styles . . . conservative of resources
 - a. Support effective quality surveillance
 - b. Encourage research in outcome evaluation
6. To respond to new issues and opportunities

And here is Donald Melville, Chief Executive Officer of Norton Corporation of Worcester, Massachusetts, with his list of recommendations to reform the system.

1. To have four interdependent systems — employers and employees, the community, and the state and federal government — work together to provide "affordable health care for all."
2. To work towards a competitive marketplace among providers
3. To bring about legislation on malpractice
4. To avoid legislation mandating coverage under health insurance for all diseases
5. To continue to require Certificate of Need for additional facilities and service
6. To place an overall revenue cap on all state acute care hospitals.
7. To remove impediments to establishing HMOs, PPOs, and ambulatory alternatives to hospitals, and to encourage these alternatives to Medicare and Medicaid patients.
8. And to have state governments themselves offer alternative care, awareness and wellness programs to all of their employees.

Difference in State Approaches

As you have read through these two lists from Minnesota and Massachusetts, both politically liberal states, you may have noticed this difference. In Minnesota, we are

EDITOR'S NOTEBOOK

committed to a competitively driven system based on informing, educating, and providing surveillance for purchasers and consumers, while in Massachusetts, this business spokesman still emphasizes a mix of regulation and competition. The Minnesota approach, in other words, is the purer model.

As John Iglehart noted in his recent article on the Twin Cities Medical Marketplace: "For the time being, in a diverse society that believes in free enterprise and has grown weary of government as a pervasive influence, the Twin Cities' competitively driven system is as good an example of health-care reform, American Style — as one can find."¹⁰

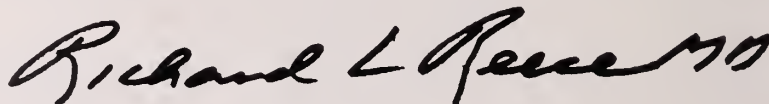
Closing Remarks

In closing, I'm reminded of the words of a Yale Law Professor, written in 1932:

"The organization of medicine is not a thing apart which can be subjected to study in isolation. It is an aspect of culture whose arrangements are inseparable from the general organization of society . . . Nor is the organization of medicine a thing which is; it was only yesterday a very different affair; and, whether we assert control or leave it drift, it will be something different tomorrow . . . Here is the heart of the problem of the organization of medicine. A profession has, quite by historical accident which was not foreseen, fallen into the world of business, and is making the adaptation which seems necessary to survival."¹¹

Quite by historical accident, a conservative administration has shifted health care cost from the public to the private sector. This shift has aroused the corporate world, and it is moving on multiple fronts to reform the medical world by making it into a competitive model.

That's the way the world looks, at least, from this deep couch in the lower lobby of the St. Paul Radisson.



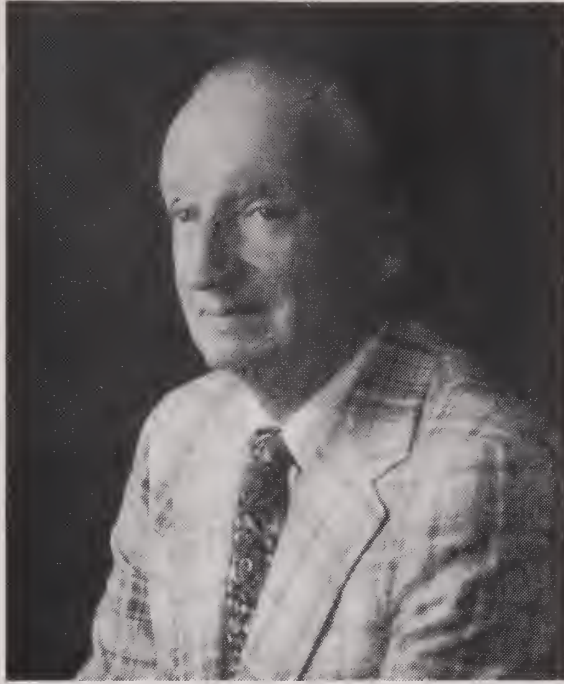
Acknowledgment

I wish to thank Doctor James B. Kenney, Executive Director of the Minnesota Coalition on Health Care Costs, for kindly providing me with information. Doctor Kenney is the author of an article "Minnesota's Coalition Style: Broad Based, Purchaser Perspective," in the January/February 1984 issue of *Business and Health*. You may obtain reprints of that article and more information on Coalition activities by writing the Minnesota Coalition on Health Care Costs, 2221 University Avenue, Health Associations Building, Suite 440, Minneapolis, 55414.

Note: Because of space and budgetary considerations, the "Editor's Notebook" will not appear in the November and December issues of *Minnesota Medicine*.

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Richard J. Webber, M.D.
1917-1984

**Eulogy delivered as Part of the Memorial Service for
Richard J. Webber, M.D. conducted by Reverend William Rolland at
Westminister Presbyterian Church, Minneapolis on August 9, 1984**

I feel specially honored to speak on this occasion. We, the family, relatives, and friends of Richard John Webber are assembled to comfort one another for the loss each of us feels in his death and to help each other recall moments or events of his life which, for whatever reason, were important for us. I know that his life impinged on each of us individually in various ways, and we necessarily each knew a slightly different Richard Webber.

Dick was a private person and did not speak easily about himself. My knowledge of his early life is, therefore, necessarily gained from others and from my impressions of the kind of childhood which would result in the man I knew.

Dick was born on April 15, 1917 in Proctor, an easy jogging distance from Duluth for one of his athletic children. The April 15th birthdate may have some prophetic significance. It falls under Aires the Ram, first sign of the Zodiac whose element is fire and centered in the head (Richard was certainly cerebral). Persons under this sign are said to have a pioneering outlook, a desire to be at the starting line, to pioneer where new frontiers are appearing. They are innately intuitive and sensitive to the latent posi-

bilities within a situation. Aires is a starter.

Richard was born to Edward and Bonnie Ann Webber. It is a commentary on the progress of medical science to note that Edward lost his first wife after a short marriage to an infectious disease. His second wife died giving birth to Clara. Richard and Caroline were products of the third marriage. Caroline died at high school age probably of pneumonia, which was much to be feared in the preantibiotic era.

Richard's father was a respected physician and the area railroad surgeon. I sense that the Webber family was classed among the aristocracy in Proctor, and the accouterments of wealth were the accepted normal for Richard. For as long as I knew him there was always an air of noblesse oblige about him.

Robert Bradford, a boyhood playmate of Richard's, recalls that he was a "regular fellow" and considered "very smart". (I take this to mean that even early on he was an avid reader and presaged the adult who was well informed on almost any subject.) He played football and with Bradford rode the family's thoroughbred horses — occasionally getting in trouble with the mother when they trespassed on the front yard and trampled her flowers.

His premedical education was at Carleton and the M.D. earned at the University of Minnesota. He enlisted in the Navy and served as a battalion surgeon with the Marines in the Pacific during W.W. II. He took part in one of the toughest battles in that theater at Tarawa and was awarded the Presidential Unit Citation. The Marine Corps is a spit and polish outfit. Dick fit right in.

I first met Richard after the War about 1946 at the Minneapolis V.A., where we were residents in surgery under Drs. John Paine and Lyle Hay in the then new affiliated University program. Dick and I came together for three months on the chest service. Most thoracic surgery at that time was for tuberculosis, and the three stage, seven rib thoracoplasty was in vogue. In that operation, which we did under local anesthesia with the patient awake, a long incision is made posteriorly around the shoulder blade through the heavy back muscles and the posterior parts of the upper four ribs are removed. Two weeks later an anterior incision was made, and the remaining parts of the upper four ribs were taken. Then, again after two weeks the back incision was reopened, and three more ribs were removed. In retrospect, this must have been a harrowing experience for the patient. I know that it was a disciplining experience for young surgeons. Dick and I worked well together and established a reputation for doing a very good thoracoplasty. Dick was fond of recalling that service, so I knew that he enjoyed it as much as I. Again it is worth noting that surgery for tuberculosis has essentially been replaced by drug treatment, most of which is received outside the hospital. The tuberculosis sanatoria are closed.

For three and a half years I shared a small office at the St. Louis Part Medical Center (S.L.P.M.C.) and worked in the O.R. with Dick. He was always a compassionate, conscientious doctor and good surgeon. However, his great genius was in being able to see trends in medical practice long before the rest of us. Moreover he had the courage and organizational ability to act on that vision.

The St. Louis Park Medical Center, now the Park-Nicollet Medical Center, was a creature of Dick's imagination, foresight, and drive. From the original group of ten talented associates which he gathered about him to start the clinic in 1951 it has now grown to over 260 physicians and rivals the Mayo Clinic in size and reputation. Such growth reflects the wisdom

and long range planning of the one I consider to be its founding father.

As happens to so many of us, Dick suffered a mid-life crisis and dropped out of the St. Louis Park Medical Center. After a brief period to get his bearings, he foresaw the trend to Prepaid Health Care Plans — the HMO concept. Again, he was able to attract a nucleus of the very best doctors in the area to form the SHARE plan. He was its general surgeon on call day and night while SHARE was in its early growth phase. As its medical director, a position he held until shortly before his death, he was again involved in setting policy which has been important in SHARE's remarkable growth.

I knew Dick to be a very sensitive, caring person. He was self-effacing and reserved to a point of shyness. He did not gossip or criticize others. I never heard him utter an unkind word about anyone. His self image required rigid control of emotion, and it was, therefore, difficult for him to express feelings. I know, however, that Mary Lee was the one woman in his life, and that she with the children, Caroline, Rick, Allison, Debbie and Quint, meant everything to him.

Dick was my friend. I will miss him. He contributed enormously to the evolution of the health care system. He lived proudly. He died courageously. I for one was happy when at 10:15 p.m. on Saturday last he was finally free to leave a body which could no longer serve him.

Dick spent many hours watching his close friend and artist, the late Bernie Quick, sketch and paint. I am no artist, but I have today tried to sketch an outline of Dick's life.

I will need help in completing the picture. To that end three others will contribute at this service, and later in the Great Hall I hope that many others will comment to add color and depth to our painting.

The St. Louis Park Medical Center and SHARE HMO stand as societal monuments to Dick Webber. Dr. Glen Nelson, President of the Board of Trustees, Park-Nicollet Medical Center, and Mr. Roger Wheeler, Administrative Executive of SHARE, will speak briefly. Then Rick Webber, second child and older son, a fast rising trial lawyer in Washington, D.C., representing the family will close this portion of the service.

Frank E. Johnson, M.D.
Minneapolis

• • •

I am honored to represent the many physicians who would wish to honor Dick Webber's memory today. My perspective of Dick Webber is multi-faceted.

First, he was a predecessor in a true sense, for when I joined the St. Louis Park Medical Center in 1969, I moved into the office that Dick had vacated. Alt-

though I subsequently came to know Dick personally, I felt his presence from my first day at the Medical Center. There were ten founders of the St. Louis Park Clinic and each made substantial contributions, but all would agree that Dick Webber was the catalyst and driving force that brought a vision to reality. As Alex Barno and others retell the history of St. Louis Park Medical Center, Dick Webber always appears as the individual who actualized the clinic's formation, and if one tried to characterize Dick Webber with one descriptor, it would be "visionary." It is fascinating

*President Board of Trustees, Park-Nicollet Medical Center, Minneapolis.

The people of SHARE came late into Dick's life. He has already lived two careers: a surgeon's, a businessman's. Dick was a builder, a philosopher, a poet. These things are too lightly said of many men; when in fact they are seldom present in most of us. But for Dick these were true because they were not just unfocused traits. They came from him in the form of wisdom, of insight; articulated in such confidence that there was no task beyond us, no barrier too high. To illustrate: Last February was the last time that the management team met together away from the office for planning and for pleasure. Dick had rewritten the classic struggle of Beowulf to describe modern medicine and each of us meeting there together. He read to us his "Saga of Beowulf, Revisited". In the last paragraph, Dick described himself:

*Administrator, SHARE, Bloomington, Minnesota

When I was in college I called home to announce that I would major in economics. My father's response was "it sounds a bit esoteric." When I came home for Christmas I noticed a stack of books, all on the subject of economics. It turned out, that he already knew more about economics than I was likely to learn. This illustrates his extraordinary intellectual curiosity. He was well read in an almost endless list of topics.

He combined that intellect with an ethic to work hard, earn your way, and never complain. The third facet of his character was love for and devotion to his family. An illustration of this was his willingness to give up a great pleasure, golf at the country club, so that there would be money to send the kids to college. Along the way, pressures mounted, and for a number

to note the cyclical nature of history for Dick's final statement in this month's issue of MINNESOTA MEDICINE provides the same incisive vision in today's tumultuous times that he exhibited more than thirty years ago. He was also remarkably resilient, and he was able to survive a very difficult time in his life and go on to enable another organization, SHARE, to succeed and flourish through his leadership as Medical Director. Finally, as we memorialize Dick, all of us should remember that throughout his career he was a physician ministering to patients in the best tradition of our profession.

Glen D. Nelson, M.D.*

"For only one figure in all that world
would the Viking flag be freely unfurled
since he and he alone has the which-one's eye
to appreciate the rapine of you and I

But he is repressed by modern breeding
and gains outlet only in his late night reading
of our saga the great saga of storm and strife
from which he gains insight to direct his life
He and he alone understands Viking aright
and in another life would carouse with delight"

Reflect for a moment on proverbs:

"By wisdom a house is built,
and by understanding it is firmly established
By knowledge the rooms are filled
with all precious and pleasant riches"

We dwell in such a house built by Dick. SHARE is his legacy to over 100,000 of us.

Roger G. Wheeler*

of years he had a drinking problem. But with the help of Mom, he conquered that problem and went on to the most productive, satisfying period of his life.

To me, his finest moment was in his last year of life. He learned in May last year that he had cancer. He was told he had three to six months to live. It took him about 24 hours to adjust to that shock. His adjustment was to continue on as he had done before: go to work, be productive, and be with his family. There was never a word of self pity.

A few days ago we discovered a short piece he had written about fellow marines who died in service. Two lines seem relevant to his service — "On occasion we the benefactors do well to grace their memory with our thoughts. I know of nothing less we might do; I know of nothing more they would wish."

Rick Webber

Editor's Footnote to R.J.W. Eulogy

In recognition of Dr. Webber's dedication to his profession and his belief that organized medicine plays a vitally important role in society, the family requested that memorials be sent to the Physicians Philanthropic Foundation of the Minnesota Medical Association, 2221 University Avenue S.E., Suite 400, Minneapolis, Minnesota 55414.

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Atrioventricular Node "Mesothelioma" with Multicystic Ovaries

Report of A Case in A Nine-year-old Girl

PAUL H. DURAY, M.D.* and JESSE E. EDWARDS, M.D.†

Atrioventricular node mesothelioma may cause sudden death. Always confined to the cardiac atrioventricular node, it is not known to be associated with other structural abnormalities. This is the second report of an association with multicystic ovaries.

SINCE THE INITIAL DESCRIPTION in 1911 by Armstrong and Monckeberg, atrioventricular node (AVN) mesotheliomas have been reported in individual case reports under a variety of names including: lymph-angioendothelioma¹, primary epithelial tumor², mesothelioma³, epithelial inclusions⁴, epithelial heterotopia⁵, endodermal inclusions⁶, atrioventricular node tumor⁷, and benign congenital polycystic tumor of the AVN⁸. Approximately 50 cases have been reported in the world literature since the initial description, but the frequency and prevalence is probably underestimated because the lesion is generally recognized only in post-mortem hearts. The importance of the tumor, if indeed it is a tumor, lies in its capability of causing sudden death. There are no other abnormalities outside of the heart associated with this lesion that have been recognized other than cystic changes occurring in the ovaries, described in a case report in 1950⁹. The second case of cystic ovaries occurring with AVN mesothelioma is reported herein.

Case Report

A nine-year-old girl collapsed suddenly while at play with other children and died within minutes following a grand mal-like seizure episode. Although she had been physically active up to the afternoon of her death, including attendance at school and participation in an after school dancing class, her parents had described her as not being "up to par" for at least a three week interval prior to death. The mother observed that the child appeared "run-down", and to be

sweating for no apparent reason. On occasion, the child would inform her mother that she had trouble catching her breath. Three days prior to death the child informed her mother of an ache in the epigastrium, and stated, "I don't feel real good." Gestational history, birth, early development, and expected physical and intellectual milestones were all within normal limits. She had been hospitalized at age two after ingesting a metal polish resulting in chemical pneumonitis which responded to treatment with no sequelae. One year prior to death she was observed to have had ulcer-like symptoms which abated without treatment.

Postmortem examination disclosed no external abnormalities. Growth and development appeared normal, and there was beginning growth of axillary and pubic hair. There was 100 cc. of pleural fluid bilaterally. The heart weighed 140 grams with biventricular myocardial hypertrophy; the left ventricle had a maximum thickness of 1 cm., and the right ventricle was 0.6 cm. thick. No other gross cardiac abnormalities were evident. Microscopic examination of the lungs showed hemorrhagic pulmonary edema bilaterally. Sections of the left and right ventricular walls of the heart showed wavy myocardial fiber phenomena of acute ischemia. Because routine gross and microscopic examination disclosed no anatomic cause of death, the cardiac conduction system was dissected and serially sectioned for microscopic evaluation. Sections of the sino-atrial node and His bundle were intact. The atrioventricular node (AVN) region was located by removing the cardiac tissue above the septal leaflet of the tricuspid valve and occupying the junction of the interatrial and ventricular septum near the os of the coronary sinus. Serial sections of this area demonstrated a tumor-like mal-

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†Department of Pathology, United Hospitals, Inc., Miller Division, St. Paul, Minnesota, and the University of Minnesota, Minneapolis.

Paul H. Duray, M.D. — American Cancer Society grant: Regular Clinical Fellowship 5492A.

Jesse E. Edwards, M.D. — Public Health Service Research Grant 5 RO1 HL05694 from the National Heart, Lung and Blood Institute.

formation of gland-like spaces and crypts embedded within a loose fibrous connective tissue stroma occupying the area between the endocardial surfaces and central fibrous body (Figure 1). The duct and gland-like spaces contained amorphous eosinophilic material with desquamated cells. The lining epithelium varied from a single layer of cuboidal cells, to endothelial-like cells. Other areas showed the lining cells to be nests of smaller cells resembling the transitional cells of the urinary bladder (Figure 2). These deep lining cells demonstrated longitudinal grooves within the nuclei. One large duct-like space was lined by multilayered columnar-like epithelium (Figure 3). While the amorphous luminal material appeared mucinous, mucicarmine and alcian blue stains (at pH 1.1 and 2.5) were negative for mucosubstance. Furthermore, the lining epithelial cells and secretion were nonreactive with the periodic acid Schiff (PAS) stain. Sections of the ovaries demonstrated multiple large cysts occupying the cortex and central portions of both ovaries, containing deeply eosinophilic fluid and lined by follicle cells (Figure 4). Discrete primordial eggs were seen in the cortex, but none within the cysts themselves.

Discussion

The diverse names for AVN mesothelioma reflect the diverse theories of origin of this histologically unusual and clinically significant lesion. Initially, Armstrong and Perry believed the origin to be from lymphatics and vascular endothelium, and hence the term lymphangioendothelioma^{10,11,23}. Mahaim and others^{11-13,17,25,27} considered the lesion to be derived from mesoderm and used the term mesothelioma. Still others have referred to the lesion as cardiac epithelial inclusion cysts^{4,8,14,24,26} or heterotopic epithelial replacement^{5,18}. Foregut endoderm has been the

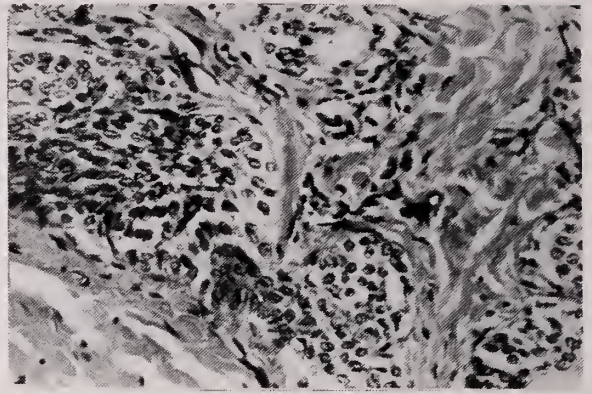


Fig. 2 — The lesion contained numerous nests of cells resembling transitional cells of urinary bladder; some of the cells demonstrate longitudinal nuclear grooves (H + E, x200).

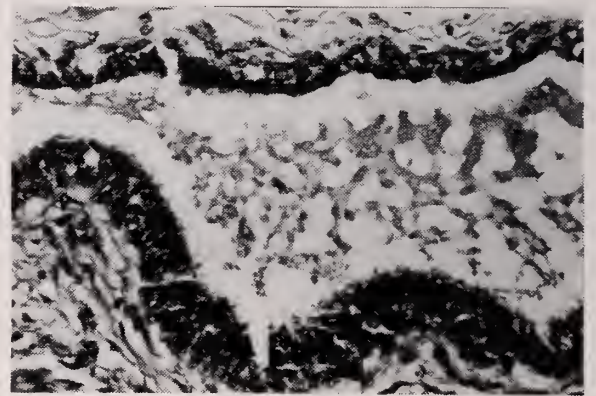


Fig. 3 — One large gland-like space is seen lined by multilayered columnar-like epithelium. There is a suggestion of microvilli on the cell surfaces (H + E, x400).

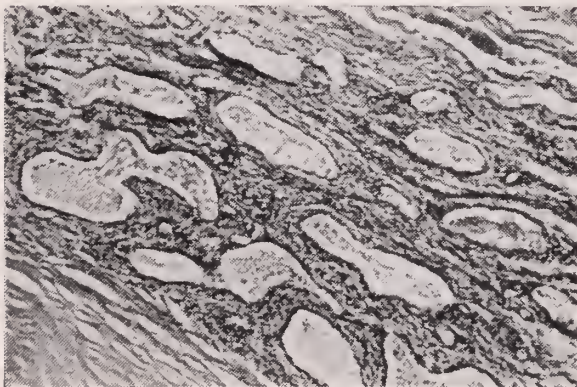


Fig. 1 — Atrioventricular node mesothelioma. Note the gland-like spaces embedded within a loose fibrous connective tissue stroma (Hematoxylin and Eosin stain, x100).

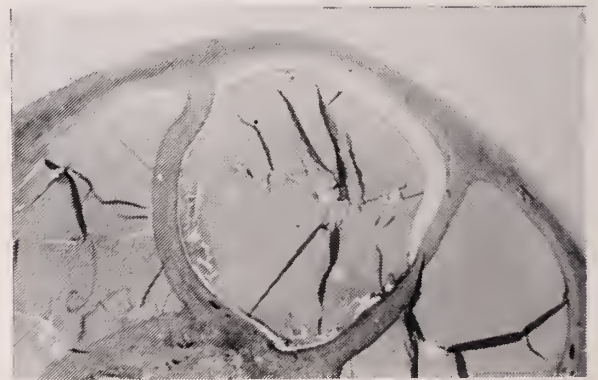


Fig. 4 — Low power magnification of the multicystic spaces seen in both ovaries (H + E, x10).

favored origin of these lesions to many other investigators^{2,4-6,14-16}, since many cases have PAS and alcian blue positivity indicating mucosubstances. Embryologically, mucin positive vacuoles have been demonstrated in endodermal foregut cells²². Because of the disputed histogenesis, James and Travers^{8,19} prefer the term congenital polycystic tumor of the AVN.

Regardless of the cell of origin of this tumor-like malformation, the lesion is clinically significant. Patients reported in the literature have ranged in age from newborn to age 84. Approximately 70% of the cases reported are females. Patients may be asymptomatic and then experience sudden death or the lesion may manifest clinically by partial or complete heart block. Many of the patients apparently experience Stokes-Adams attacks and other less severe forms of cardiac syncope. Although complete heart block is the most frequent arrhythmia noted in these patients, all forms of tachyarrhythmia including supraventricular tachycardia and junctional rhythms, have been described. It is not known what circumstances predispose patients with AVN mesothelioma to experience sudden unexpected death, since the tumor does not seem to grow and proliferate in the usual neoplastic fashion. Furthermore, encroachment on the AVN seems to be maximally present even in the newborn. Since the lesion is confined to the region of the AVN or the superior portion of the crista terminalis in the interatrial septum, and does not appear to involve the His bundle, it is possible that the latter may provide a focus for escape pacemaker activity. This has been recorded in one case⁷, wherein the escape pacemaker activity was documented by His bundle electrocardiograms. This escape pacemaker activity from the His bundle may be the mechanism by which patients will have this lesion for many years into adulthood, with or without a chronic heart block state, and not experience sudden death.

The gross cardiac findings in most cases at autopsy are consistent with biventricular cardiac hypertrophy. The tumor itself may or may not be visible depending on the size of encroachment. Maximum sizes recorded have been in the range of 2 to 2.5 cm., with some lesions being described as a small bulge. Many

cases, however, including ours, were not appreciated macroscopically. A lesion may not be documented unless the conduction system is serially blocked and sectioned. Usually no other anomalies have been described with the lesion, although one of us (JEE) previously reported a case of ventricular septal defect associated with AVN mesothelioma²⁷. The present case and Leighton's case⁹ comprise two instances wherein cystic changes were found in the ovaries. Other than multilayered small cuboidal cells lining the cysts of the ovaries, there are no other similarities between the lining cells of the AVN lesions and lining cysts of the ovaries. Photomicrographs of the ovaries of Leighton's case are remarkably similar to the ovaries in our case. It is not known if there is a relationship between these two findings or if this is mere coincidence.

Microscopically the AVN mesotheliomas are composed of variably sized cysts, gland and duct-like spaces and crypts lined variably by columnar, cuboidal, squamoid, or polyhedral epithelial cells, either mono- or multilayered. Several workers have called attention to the resemblance to transitional cell epithelium of the urinary bladder as was present in our case. Furthermore, while a frequent description in the literature consists of ducts and cyst-like spaces, some cases have nests and other areas of solid cells without lumina. Thus the lesions are not purely cystic in nature.

Although the specific origin of the lesion remains a question, there is an undisputed high propensity for sudden unexpected death, and indeed Wolf has referred to this entity as "the smallest tumor which causes sudden death"²⁸. The entity should be sought for in patients who have documented recurrence of persistent arrhythmias, particularly a heart block. Since the lesion can be found in subendocardial regions above the septal leaflet of the tricuspid valve, it is possible that endocardial biopsy may reveal its presence thus enabling a possible diagnosis during life.

Acknowledgments

In appreciation to Dr. Juan Rosai of the University of Minnesota for his assistance, also to Pamela Hinman for secretarial assistance, and to Robert Specht for photographic assistance.

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Treatment of Obstructive Sleep Apnea with Continuous Positive Airway Pressure (CPAP) by Nasal Mask

MARK K. WEDEL, M.D., F.A.C.P.†; BRUCE J. VAN DYNE, M.D.‡; and THEODORE M. BERMAN, M.D., F.C.C.P.#

Three patients with severe obstructive sleep apnea improved subjectively and by overnight sleep studies after treatment with continuous positive airway pressure during sleep.

SLEEP APNEA SYNDROME is characterized by snoring, periodic respirations, and daytime sleepiness. The cause of obstructive sleep apnea remains obscure, but most evidence points to the oropharyngeal musculature as the location of nocturnal airway collapse.

Medical therapy of this syndrome is frequently disappointing. Weight loss, oxygen, medroxyprogesterone, theophylline and protriptyline have all been utilized, most with limited success. Permanent tracheostomy has been effective, but the physical and psychological consequences of a tracheostomy may be considerable.^{1,2}

Several case reports in the literature have described the use of continuous positive airway pressure via nasal mask to improve sleep apnea.^{3,4,5} Because of three patients with disabling sleep apnea who refused

permanent tracheostomy, we undertook a trial of nocturnal nasal continuous positive airway pressure (CPAP) and report here our initial results.

Methods

Three men with excessive daytime sleepiness had overnight sleep studies. Mean age was 45 (range 40-55). All were overweight (200-402 pounds). Polysomnographic studies consisted of recording electroencephalogram (C₃/A₂, C₄/A₁), eye movements and submental electromyogram. Nasal and oral air flow were measured by thermo-couple. Anterior-posterior rib cage and abdominal movements were monitored by inductive respiratory plethysmography. Arterial oxygen saturation was monitored by ear oximetry. Sleep stages were defined by the generally accepted system of Rechtschaffen and Kales. Apnea was defined as the cessation of air flow for ten seconds or more. Hypopnea was defined as a fall in tidal volume to one-third of baseline, associated with at least a 4 per cent drop in oxygen saturation.

Our patients were initially studied in the Methodist

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TABLE 1
Results of Sleep Studies before and after Nasal CPAP

Patient		# of Apneas	# of Hypopneas	Apnea Index	# of EEG Arousals	Lowest O ₂ Saturation	% Slow Wave Sleep
1	Before	186	141	86	240	7	8
	After	2	22	6	21	80	18
2	Before	410	86	85	481	56	1
	After	20	2	4	58	85	8
3	Before	270	122	54	300	62	3
	After	0	14	0	21	85	15
Mean	Before	289	116	75	340	42	4
	After	7	12	3	33	83	14
P Value (based on means)		.02	.01	.01	.02	.06	.01

¹Total # Apneas/Total Sleep Time

Sleep Laboratory to confirm their diagnosis. They were then restudied on a subsequent night after using the nasal CPAP system for 3-6 months. The CPAP system consisted of a pediatric anesthesia mask fitted over the nose and through which continuous positive pressure (range 5-8 cms. of water) was applied during sleep. This positive pressure was generated by a small air compressor. The data was analyzed using a paired T-test. A p value $< .05$ was considered significant.

Results

The results from the sleep studies done before and after treatment with CPAP are shown in the Table. The patients had severe obstructive sleep apnea before treatment with a mean apnea index of 75 apneas per hour of sleep. After treatment with nasal CPAP we found significant improvement with marked reduction of apneas, hypopneas, and arousals. Also, significantly more time was spent in slow wave sleep (stages III & IV deep sleep) after treatment with CPAP. All patients subjectively improved with reduction in daytime sleepiness and snoring.

Discussion

The results of this study confirm that the application of small amounts of nasal CPAP significantly reduced the frequency and severity of sleep-disordered breathing. These patients showed objective evidence for improvement in sleep quality and were subjectively improved.

Nasal CPAP may function as an airway "splint." Previous work has demonstrated hypotonic oropharyngeal musculature in these patients during

sleep. The negative intrathoracic pressure generated during inspiration then causes the oropharynx to further collapse, resulting in obstructive apnea. Preventing this oropharyngeal collapse by mechanical means (e.g. endotracheal tube) or by a CPAP generated airway "splint" results in improvement of airway patency.

Recently an alternative mechanism for the beneficial effect of CPAP has been proposed. Positive pressure may stimulate the oropharynx to increase the level of resting tone in the oropharyngeal musculature. A study applying positive airway pressure only during expiration supports this idea.⁶

Nasal CPAP can be effective in selected patients. The precise role of CPAP in the treatment of obstructive sleep apnea, however, is more difficult to define. It is not the treatment of choice for patients with life-threatening cardiac arrhythmias during sleep. These patients need immediate tracheostomy. The remainder of patients, however, can be considered for this mechanical form of airway splinting. Serious side effects are negligible. Reduction in cardiac output, pneumothorax, and airway drying are theoretical concerns that have been raised but not reported. While the system is somewhat cumbersome, it is still well tolerated by most patients.

Currently we use CPAP in those patients with obstructive sleep apnea who do not need immediate tracheostomy. We use it until they are fully acclimated to its use and their daytime sleepiness and sleep quality have improved. We then consider them for uvulopharyngoplasty, long term use of CPAP, or tracheostomy.

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Adverse Effects of Non Steroidal Anti-Inflammatory Drugs in the Kidney — Stillman, (page 559).

Leukemia*

ROBERT B. HOWE, M.D.†

THE "CURE OF CANCER" is a long sought after but frequently elusive goal for the physician. However for the patient with leukemia, the past two decades of medical progress have changed this dream to reality. For many or most patients with acute leukemia cure is at hand, and for many others it appears to be within our grasp. Twenty years ago cure of acute leukemia was virtually unheard of, treatment of questionable effectiveness, and survival measured in months. In the course of this symposium, the highlights of the progress which have provided this new optimism will be covered in a context which we plan to be useful to the primary care physician and his patient. Important aspects of the classification of acute leukemias will be highlighted since the appropriate designation is essential if effective therapy is to be applied. Newer diagnostic techniques, including chromosome analysis and identification of cell surface markers, which enable us more accurately to classify leukemias will be discussed. The clinical manifestations which bring the patient with acute or chronic leukemia to the physician will be outlined since it is the primary care physician who usually has the first opportunity to make this critical diagnosis and prescribe appropriate

therapy. Since the management of acute leukemia is both intense and complicated, the "team approach" will be emphasized.

Much of the success of the management of acute leukemia is attributable to the management of the diverse and potentially devastating complications of these diseases; all of which feature, to some extent, bone marrow failure and its resultant pancytopenia. Modern blood component therapy has made the treatment of the anemia of bone marrow failure a relatively simple problem. The use of screening tests for coagulation problems combined with the aggressive administration of coagulation factors and platelet transfusions have reduced bleeding from the most common cause of death in leukemia, to a relatively unusual cause. New antibiotics have markedly reduced the morbidity and mortality of bacterial infection, but have allowed the emergence of a whole new spectrum of pathogens, many fungal, which must be recognized. Treatment of these remains a major challenge to the physician caring for the leukemia patient. These complications are often the presenting manifestations of leukemia. Therefore a high level of diagnostic suspicion on the part of the primary care physician is essential if a successful outcome is to be achieved. An overview of these complications with particular emphasis on management of infections and hemorrhagic manifestations is being published each month.

Presented at symposium, "Leukemia Progress — 1984," Saturday, April 14, 1984, Mayo Auditorium, University of Minnesota, Minneapolis, Minnesota.

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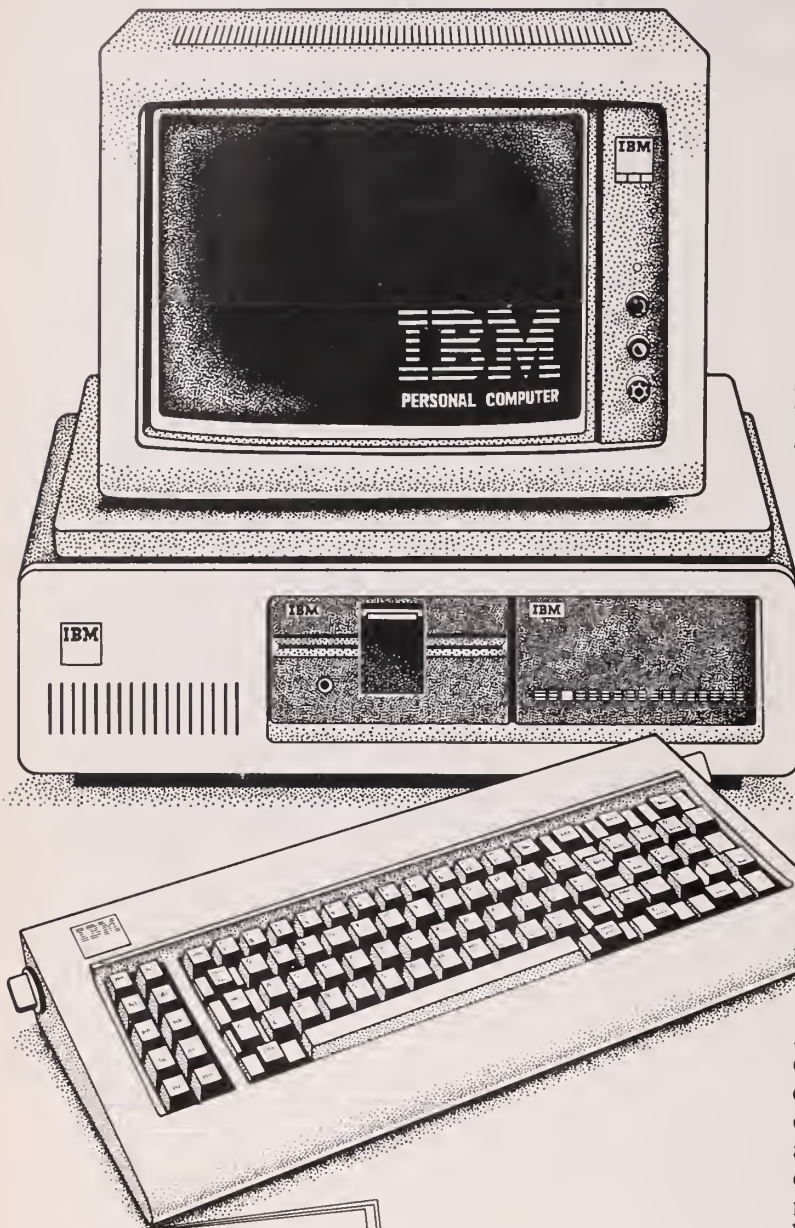
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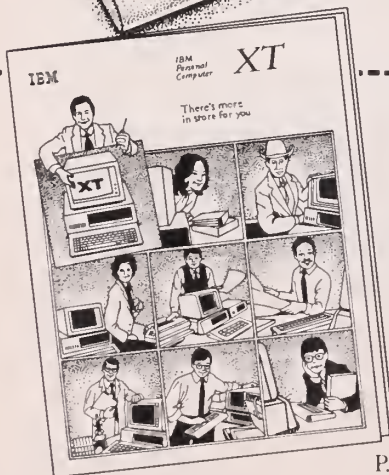
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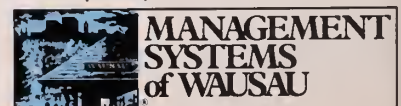
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When a Deflatable Foley's Catheter Won't

H. A. ALIABADI, M.D.*, P. GLEICH, M.D.* and C. F. JOHNSON, M.D.*

The available methods of deflating a noncollapsible Foley's catheter balloon have been presented and a simple technique has been proposed. An orderly and systematic approach to this problem should yield satisfactory results.

SINCE ITS DEVELOPMENT in 1929 by F. E. B. Foley, the "inflatable bag" catheter has undergone considerable refinement in its manufacture. The genius in its original design, however, has essentially remained unchanged.¹ Not only is the Foley catheter the most commonly used instrument in urologic practice, its utility as a technical adjunct has been realized in certain colorectal, anal and gynecologic surgical procedures.² It is estimated that in up to 15% of hospitalized patients in America a Foley's catheter is used.³ It is not surprising, therefore, that catheter related complications occasionally occur.

Inability to deflate the balloon is the most frequently reported mechanical complication and several authors have published their experience and technique in dealing with this problem.^{4,5,6,7} This report presents a synopsis of each of the published techniques and discusses a new method of dealing with a non-deflating balloon by a transrectal approach in the male. In the female patient an analogous approach through the anterior vaginal wall may be utilized.⁶

Cutting the Side Arm

The objective here is to remove the valve which prevents the spontaneous deflation of the balloon catheter. This is a simple and logical step and should be tried initially. The valve should be severed as distally as possible and not flush with the main catheter.

Overinflation of the Balloon

Air or sterile water may be used to overinflate and rupture the balloon. Up to 190 cc. of water may be required before rupture occurs⁸ which is always accompanied by a sudden painful sensation. The risk of damage to the urethra or bladder wall is significant. Chances of retaining a rubber fragment is high. We consider this an unsafe method and its use is condemned for obvious reasons.

Chemical Rupture

Rubber solvents may be injected into the inflation port of the balloon to cause its disintegration. Chloroform, ether, mineral oil and acetone all have been reported to be successful. A significant drawback, however, has been the severe inflammatory response of the urothelium to these agents along with bladder spasms and pain. Distension of the bladder with saline prior to their instillation may lessen but does not eradicate the discomfort. Furthermore, a significant amount of time may have to elapse before disintegration occurs, and at times it may be unsuccessful. For these reasons we cannot recommend their use.

Insertion of a Ureteral Catheter Stylet

Insertion of a thin ureteral stylet through the lumen of the balloon tube may overcome the obstruction and deflate the balloon. Occasionally we have found that the maleability of the stylet has prevented its negotiation past the obstructing point. This certainly is a useful suggestion and should be tried subsequent to severing the valve.

Transperitoneal and Suprapubic Approach

A three and a half inch 20 gauge spinal needle may be negotiated to the bladder neck just to one side of the midline in the perineum.⁴ Piercing the balloon allows catheter removal. In a recent report Kleeman described his suprapubic technique.⁶ A spinal needle is directed at the bladder neck through a suprasymphyseal route towards the balloon in a similar fashion. Both are blind procedures and several passes may be necessary. Furthermore, the suprapubic approach may prove undesirable in the obese patient or in those with previous lower abdominal surgery where loops of bowel may be encountered.

Endoscopic Removal

The catheter may be cut two inches distal to the extended urethral meatus and the tip of an obturator engaged into the lumen. The obturator within the sheath guides the catheter back inside the bladder in a retrograde fashion. The balloon catheter is then visu-

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alized directly cystoscopically and pierced. Catheter may then be removed by grasping forceps.⁷ In a similar fashion after cutting the catheter distal to the meatus, a #28 Fr. panendoscope sheath can be threaded over the catheter into the bladder, the balloon held snugly against its beak, and using a flexible endoscopic scissors the balloon may be punctured and catheter withdrawn.⁵ Both methods involve special urologic training and equipment, are costly and may require general anesthesia.

Transrectal Needle Puncture

In the male patient a single dose of an aminoglycoside is administered parenterally, followed by a fleets enema. He is then placed in the dorsolithotomy position and the lower rectum and anal canal is flushed with a dilute solution of povidone

iodine. Gentle traction is placed on the catheter by an assistant so that the balloon fits snugly against the bladder neck. With the index finger in the rectum, this movement can be well appreciated and the balloon felt with ease. A 25 gauge long spinal needle is then guided towards the balloon transrectally. Catheter is withdrawn after balloon deflation. This method of catheter removal was utilized on two patients with chronic indwelling catheters; it proved successful in both cases. No complications were encountered.

This technique requires no special tools, is easy to perform, is safe and rapid, doesn't require special training and causes no pain. Of course, as with any technique, the balloon should be thoroughly inspected for any missing fragments and endoscopy should follow to remove any retained pieces.

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Adverse Effects of Non-Steroidal Anti-Inflammatory Drugs on the Kidney

M. THOMAS STILLMAN, M.D., F.A.C.P.*

SEVERAL NEWER NONSTEROIDAL anti-inflammatory drugs (NSAID) are available for the treatment of rheumatologic conditions. Their anti-inflammatory action is due, primarily to the inhibition of prostaglandin synthesis from arachidonic acid by blocking the enzyme cyclo-oxygenase. In addition to their role in inflammation, prostaglandins affect various physiologic functions and are synthesized in several tissues including the kidney. With increased use of NSAID, various side effects, secondary to prostaglandin blockade are being identified including adverse effects on renal function. These adverse effects include: (1) Functional renal insufficiency. (2) Fluid and electrolyte abnormalities. (3) Acute allergic interstitial nephritis. (4) Nephrotic syndrome with varying amounts of renal insufficiency. (5) Renal insufficiency associated with papillary necrosis.

Functional (reversible) renal insufficiency associated with the use of NSAID represents the most common renal adverse effect reported.^{1,2} It should be suspected in patients with pathophysiologic states of ineffective circulatory volume or active renal vasoconstriction. Maintenance of renal function is dependent upon the compensatory synthesis of vasodilatory prostaglandins (PGE₂, PGI₂) to support renal blood flow or glomerular filtration. Examples of these states include: Sodium depletion, hypotension, acute and chronic renal disease, and sodium avid states such as cirrhosis of the liver, nephrotic syndrome, and congestive heart failure. Additional risk factors for NSAID induced renal insufficiency include: advanced age; presumed renal vascular disease secondary to long-standing atherosclerotic cardiovascular disease, diabetes, or hypertension; and concurrent use of diuretics during NSAID therapy. This complication may be recognized by the rapid rise and recovery of BUN and creatinine with initiation and cessation of the NSAID.

Since renal prostaglandins both enhance sodium excretion and act as natural antagonists to antidiuretic hormone, their blockade with NSAID may lead to weight gain secondary to fluid retention.³ In addition, prostaglandins may stimulate the renin-angiotensin-

aldosterone system. Through prostaglandin blockade, NSAID may inhibit this system resulting in a transient elevation in serum potassium. Rarely the hyporeninemic, hypoaldosteronemic effect of NSAID may lead to a renal tubular acidosis with severe hyperkalemia.⁴

As with several other drugs, NSAID may rarely cause an acute allergic interstitial nephritis usually associated with short drug exposure, fever, rash, and renal insufficiency without significant proteinuria, i.e. less than 3 gm per 24 hours. There is usually an eosinophilia and eosinophiluria and the mechanism is probably an IGE mediated hypersensitivity reaction.⁵

An additional form of interstitial nephritis associated with nephrotic syndrome and varying degrees of renal insufficiency has been noted secondary to NSAID, particularly fenoprofen.⁶ This entity is usually seen in older individuals following prolonged drug exposure and resolving after the cessation of the drug from 2 to 6 months. Allergic manifestations are rare. The characteristic renal biopsy findings include: a varying spectrum of patchy interstitial mononuclear cell inflammation, acute tubular necrosis, and glomerular changes limited to foot process fusion on electron microscopy. Cell mediated immunity appears to be playing a role in the pathogenesis of this entity and steroids may be of some benefit in its treatment.⁷

Finally NSAID, particularly aspirin given in conjunction with other analgesics, i.e. phenacetin or acetaminophen, may be associated with renal failure secondary to papillary necrosis and interstitial nephritis.⁸ This entity is seen in patients who have ingested accumulative amounts of analgesic compounds in excess of 1000 gm. The pathogenesis of this lesion includes direct tissue toxicity of the analgesic combined with reduced renal blood flow resulting from antiprostaglandin effects of the aspirin.

NSAID are generally considered safe and well tolerated and their use has been infrequently associated with adverse renal effects. However, individuals at increased risk, particularly the elderly with presumed underlying renal vascular disease taking diuretics, should be monitored for renal abnormalities while being treated with these agents.

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References will be found on page 554.

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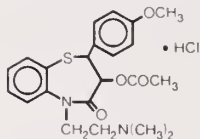
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DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)-one, 3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-[4-(methoxyphenyl)-monohydrochloride, (+) - cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. **Angina Due to Coronary Artery Spasm:** CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of frequency corresponding to the relative frequency of occurrence:

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and anxiety.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episodic vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single dose of CARDIZEM.

The following postmarketing events have been reported frequently in patients receiving CARDIZEM: erythema multiforme, koppenia; and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect relationship between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.60 to 1.0 mg). It is no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed high-degree AV block should be treated with cardiac pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levarterenol bitartrate).

Actual treatment and dosage should depend on the severity of the clinical situation and the judgment and experience of the physician.

The oral LD_{50} 's in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD_{50} 's in these species were 60 and 38 mg/kg, respectively. The oral LD_{50} 's in dogs is considered to be in excess of 50 mg/kg, while lethal doses have been seen in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSEAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals and at bedtime, dosage should be increased gradually (given in doses three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage appears to be 180 to 240 mg/day. There are no available data on dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

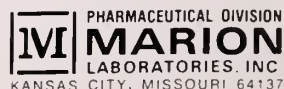
Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be administered with short- and long-acting nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (NDC 0088-1771-47) and in Unit Dose Identification Packs of 100 (NDC 0088-1771-49). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Unit Dose Identification Packs of 100 (NDC 0088-1772-49). Each white tablet is engraved with MARION on one side and 1772 on the other.

Another patient benefit product from



Minnesota Workers' Compensation Law

Reforms: Preventing a Delayed Recovery

STEVE KEEFE* and ROBERT HART, M.D.†

The Minnesota Workers' Compensation Law was changed dramatically in 1983 to put more appropriate emphasis on helping injured workers recover from their disability. The changes are designed to encourage a prompt return to work while avoiding reinforcers for a delayed recovery. Key elements of the new law include: (1) Early recognition and intervention in cases of delayed recovery. (2) Appropriate financial incentives for both employers and employees encouraging an early return to work. (3) Mechanisms to resolve conflict and avoid litigation. (4) Early rehabilitation efforts, with mandatory rehabilitation involvement for any employee unable to return to his or her former occupation. (5) Education so employers and employees understand the importance of cooperating with the employee's physician to accomplish prompt recovery.

IN RESPONSE to criticisms about Minnesota's rapidly rising workers' compensation costs, studies comparing Minnesota's system to other states were performed in the late 1970s and early 1980s by the Minnesota Legislature, the Department of Commerce, and the Citizen's League. Several key findings suggested that the Minnesota system seemed to be encouraging disability. Although Minnesota has a slightly smaller work force and slightly lower accident rate than Wisconsin:

1. Permanent total disability cases occurred 20 times more often in Minnesota than in Wisconsin.
2. Temporary disability cases lasted 50% longer in Minnesota than in Wisconsin.
3. Medical costs per case averaged 50% higher in Minnesota than in Wisconsin.

One of the key variables in determining workers' compensation costs is the litigation rate, which shows a greater correlation with premium levels than does the benefit level. Although workers' compensation is supposed to be a no-fault system with a minimum amount of litigation, litigation rates in Minnesota had risen to 12% in 1982 compared to less than 3% in Wisconsin (but 35% in California).

Most long-term disability cases in Minnesota involve apparently minor back injuries which have dragged on for years, marked by progressive conflict, deteriorating relationships between employer and employee, and ultimately the loss of any chance for rehabilitation or return to work of the employee. In

such an adversarial climate, legal representation and litigation were common. Avoiding such a destructive climate became a major goal of the new law.

The New Law

Medical and Rehabilitation Model

Rather than being a purely legalistic structure with little attention to rehabilitation and medical issues (as is the case with most workers' compensation laws), the new law recognizes the value of early rehabilitation, with aggressive identification and intervention in those cases likely to lead to a delayed recovery syndrome. Although the overall success rate for rehabilitation in Minnesota since the passage of the mandatory rehabilitation law in 1979 has been 84%, the success rate for cases in which a referral to a rehabilitation counselor occurs within the first 90 days is nearly 100%. Insurers are now required to perform a screening rehabilitation assessment of any employee who has missed 30 days of work due to a back injury or 60 days of work due to any other work-related condition. The assessment is designed to identify factors which may suggest a delayed recovery and a need for rehabilitation involvement.

Change in Financial Incentives

One of the unique changes in the new law is the two-tiered benefit structure, which is designed to encourage a prompt return to work. The system rewards employers who offer their employees jobs which enable them to return to work in spite of any permanent partial disabilities. A worker with such a disability is financially rewarded for returning to work as soon as

*Commissioner, Minnesota Department of Labor and Industry

†Medical Director, Minnesota Department of Labor and Industry.

possible. There is also an incentive to return injured workers as quickly as possible to restricted "light duty" jobs. Such restricted jobs not only reduce workers' compensation liability (a job within the restrictions ends the employee's weekly compensation benefits), but also speed the employee's recovery if such employment is coordinated carefully with the employee's treating physician and is designed to restore the employee as rapidly as possible to his or her full pre-injury capacity.

The Department of Labor and Industry is engaged in efforts to educate employers regarding the progressive management of work injuries. The value of good working relationships with employees is emphasized, with support for an employee's early recovery and return to work. This is important to avoid the negative impact of hostility and litigation and to assist in the employee's recovery by the prompt provision of suitable work.

Efforts to Reduce Litigation

Another key aspect of the new law is vehicles for reducing the need for litigation, with its resultant costs. Half of all litigation under the old system was the result of disputes over the degree of permanent partial disability that resulted from differing medical opinions about the seriousness of a given injury, even though disagreement about the diagnosis was rare. The new permanent partial disability schedules were developed with the cooperation of the Minnesota Medical Association to establish clear and precise guidelines based on objective, reproducible findings. Similar schedules have been extremely effective in California, Wisconsin, and Oregon in avoiding disputes over disability determinations. In addition, efforts have been made to reduce the need for physician involvement and testimony in litigation. A written medical report is to be used as the basis for decisions except in unusual cases. Neither party to litigation may call doctors to court without permission of the judge.

The new law also provides means for improved communications and conflict resolution before resorting to litigation. The Department of Labor and Industry has improved its ability to respond quickly to questions from any party in the process and to resolve disputes without the involvement of an attorney. This approach has helped lower the litigation rate in Wisconsin. When disputes cannot be headed off by early intervention, simple, non-adversarial conferences are available to resolve issues regarding rehabilitation, medical care, medical fees, or discontinuance of benefits. The conferences are informal meetings con-

ducted by rehabilitation specialists in which the parties are encouraged to discuss the issues openly and try to come to an amicable settlement. Settlement rates have exceeded 90% in rehabilitation and medical conferences and 45% in discontinuance conferences. Fewer than 10% have led to litigation.

Medical Monitoring System

The new medical monitoring system is designed to encourage quality medical care and cost-effective treatment and to discourage medical support for ongoing disability. The Department's medical director and the Medical Services Review Board, an advisory panel and appeals board consisting of six medical doctors, two chiropractors and four public members, are responsible for these goals. An increased effort is being made to monitor medical care to identify problem areas. In addition, an effort is being made to identify providers whose clinical results at returning injured workers to work are substantially inferior to those of their peers. Efforts will be made to help these providers improve their clinical outcomes. In extreme cases, providers may be disqualified from participation in the workers' compensation system.

Implemented at the same time as the recent changes are new fee schedules. These were authorized by the 1981 Legislature. These were established by review of usual and customary fees throughout the state and are set at the 75th percentile of the previous year's reimbursement. These fees were set in consultation with various state, private and professional organizations, including the M.M.A., and it is hoped that they set a reasonable balance between cost control and reimbursement adequate to encourage physician participation in workers' compensation care.

As in other areas of the system, provisions are made for resolution of disagreements regarding fees, appropriateness of care, quality of care, and duration of disability through conferences and open discussion between all the involved parties. The goal again is reasonable, fair resolution of conflicts to avoid resort to more complex adversarial approaches.

The Physician's Responsibility under the New System

The physician plays a key role in the success or failure of the new system. Everyone involved — patient, employer, claims representative, rehabilitation counselor — will be looking to the physician for leadership and guidance. But this role carries added responsibility. Among the critical areas are:

Communication

You must help the patient understand the impor-

tance of early mobilization, early activity, and an early return to work. These are essential if a delayed recovery and a poor outcome are to be avoided. The employer needs to understand the level of activity you are recommending at each stage of convalescence so that he or she can identify appropriate jobs the employee can safely perform, allowing for an early return to work. Your response to employer's questions and phone calls, though an inconvenience, will allow proper case management and save millions of dollars, and most importantly may prevent delayed recovery, a depressed patient, chronic disability, and enormous human and economic costs.

Aggressive Case Management

Follow the case closely. Get your patient moving early. If the employee is not making the progress you expect, look carefully for complicating factors. Consider whether an alternative approach is needed. Try to recognize delayed recovery syndrome early and take appropriate steps.

Early Referral to a Rehabilitation Counselor when Problems Arise

If there are signs of a delayed recovery or if the

employee is unlikely to be able to return to his or her previous occupation, report the situation to the employer or insurer promptly to arrange timely referral to a rehabilitation counselor. If they will not act, the case may be referred to the Rehabilitation and Medical Services Section of the Minnesota Department of Labor and Industry.

Summary

The new workers' compensation system is designed to foster active cooperation by participants to encourage a prompt recovery and return to work for all injured workers. The system is designed to minimize those aspects which contribute to or even cause delayed recovery syndrome and to provide tools and methods for confronting such cases when they do arise in a nonlitigious forum so medical plans and rehabilitation plans can be developed to rapidly resolve the condition and return the employee to productive, useful employment. Accomplishing this goal is critical, not only to the economic health of the system but to the ultimate health and well-being of the patient who is the system's primary responsibility.

*See the article on page 567.

Title:	Office Management of Common Orthopaedic Problems
Date:	February 23-March 2, 1985
Location:	Radisson Inn Maingate, Orlando, Florida
Sponsors:	Minnesota Medical Association and Minnesota Orthopaedic Society
Content:	Program will cover broad spectrum of topics associated with office evaluation of common orthopaedic problems. Faculty consists of orthopaedists specializing in pediatrics, sports medicine and problems of foot, shoulder and hand.
Travel/Recreation Information:	Brand New hotel at entrance of Disneyworld and Epcot Center
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Delayed Recovery in the Patient with a Work Compensable Injury*

V. JANE DEREBERY, M.D.†, and WILLIAM H. TULLIS, M.D.‡

Under certain circumstances patients who are receiving compensation for an injury will have a disproportionate disability and delayed recovery because of reinforcers provided by the accident. Successful treatment depends on early recognition that the primary problem is emotional rather than due to concurrent physical problems. A few general rules can be helpful in the diagnosis and treatment of this type of patient. A thorough psychosocial history should be taken, and return to work as soon as possible is essential. With awareness of this process, the physician can work with the company, the therapist, and other consulting physicians to minimize the patient's disability and to maximize recovery.

UNDER CERTAIN CIRCUMSTANCES patients who are receiving compensation for illness or injury will have a disproportionate disability and a delayed recovery because of reinforcers provided by the accident. Reinforcers can include such factors as income, sympathy, attention from the family and community, escape from responsibility, revenge against a company, and resolution of an internal conflict. This type of patient is frequently thought to be malingering by involved physicians, although in actuality this is usually an unconscious process, rather than a case of conscious fraud. Hirschfeld and Behan^{1,2} found that certain internal conflicts can lead an individual to actually cause the accident in some cases, and to hold onto the injuries sustained because the accident is a solution to current life problems. Such patients cause a tremendous financial burden to society, can be very frustrating for the physician to treat, and can be very resistant to treatment.

As early recognition is imperative, successful treatment of such a patient requires that the physician have a high index of suspicion when dealing with a compensable injury of any kind. Chronicity in compensable injury cases should be considered psychogenic unless the failure to recover can be clearly explained as the normal response to the physiologic insult.^{1,2}

The problem of the patient with a delayed recovery

or disproportionate disability has been fueled by a number of factors such as the present workers' compensation system, prevailing medical attitudes, conditions of employment, and factors inherent in the individual patient.

Workers' compensation laws place the responsibility for the worker's safety predominantly on the employer; and even in the case of gross negligence by the employees the employer is held responsible for any sustained injuries of that employee. Current laws provide compensation for being disabled and incapacitated, and it has at times grown difficult to motivate some disabled workers to make a full effort toward rehabilitation, especially before an insurance claim has been settled. The system does not encourage the individual to take responsibility for his own welfare.

The problem is also propagated by a widespread medical practice of prescribing additional rest and inactivity for the patient who is experiencing a delayed recovery following a musculoskeletal injury. This is particularly common when dealing with low-back injuries, which account for 35% of compensable disabling injuries. The physician, who may not recognize that the delayed recovery is primarily due to psychological factors, often succumbs to pressure from the patient, who may assert, for example, that there is no restricted duty work at his company or that he is in too much pain to work. This results in an unhealthy situation in which the patient governs the physician's medical treatment. Just as the physician will not hesitate to order a painful but necessary injection for an 8-year-old child who pleads that such treatment will hurt too much, he must also recognize

*Reprinted from: *Journal of Occupational Medicine*/Vol. 25, No. 11/November 1983, by permission.

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that return to work, although painful, is perhaps the most essential part of treatment of the patient suffering a delayed recovery. Keeping the patient off work not only leads to a general physical weakening, but also may have adverse psychological effects, such that the patient may perceive that his injury is more severe and disabling than it actually is. In a study of hospitalized patients with back injuries, Krusen and Ford³ found there was 33% less objective evidence of impairment and 44% less long-term improvement among patients who were receiving compensation than among those who were not.

Another contributing factor is that the current system provides no incentive to the employer to provide restricted duty for the recuperating employee, and many industries therefore have a blanket policy forbidding return to work with any physical restrictions. This practice has been sanctioned heavily by the common reaction of unions, which are opposed to early return to work after an injury. It is thought that the patient is entitled to time off for even a minor injury, despite sound medical evidence that activity and work will hasten healing.

Characteristics of the individual employee can contribute to the prolongation of symptoms following any injury. The employee's emotional well-being and personality will greatly influence the response to trauma. For example, if a patient has a strong unconscious desire to be taken care of and significant dependency needs, he may well resist recovery from his injury.⁴ The patient will also have to deal with both physical and emotional trauma sustained during the accident and adapt to whatever permanent injuries he might have suffered.⁵ The patient's ability to recover rapidly and fully will be affected by whatever secondary gain he might be receiving after the injury.^{6,7} This factor is perhaps the one to which physicians are the most blind, as we find it difficult to admit that some patients simply have no desire to get better.

It must be remembered that the majority of patients receiving compensation for an injury will not show a delayed recovery. In this article an attempt will be made to identify those patients who will be at high risk of having a delayed recovery, and to suggest successful treatment approaches.

Let us consider the sequelae that frequently occur with the difficult patient. Initially the physician does not suspect that this patient will have a delayed recovery. He evaluates the patient following a compensable injury, treats him according to accepted medical practice, and writes the patient a release excusing him from work. Somewhere in the course of the patient's physiological recovery, the physician begins to notice

that something is amiss. While the patient's clinical picture improves, his complaints of pain and/or disability do not. The physician becomes concerned that he is missing some additional medical problem; he orders more tests, consults with specialists, and continues to keep the patient off work. He may also notice the development of functional components in the course of the patient's physical examination and, as each test is found to be negative and as other physicians can find nothing extraordinary, the physician begins to suspect that the patient is a "crook" or "malingerer." The doctor tends to withdraw from that patient's care; he may write a report to the insurance company stating that the diagnosis is not clear or that the problem is functional or nonorganic.⁸ Although the patient is so labeled, no treatment is recommended. Eventually, the patient might be referred, either by this doctor or by the insurance company, to some physician who believes that the patient might be helped by some surgical procedure. The patient is not made better by this surgery, in fact he becomes worse. Eventually a disability claim is filed; the matter is settled in a court of law; and the patient is awarded compensation and a disability rating. By this time one to three years may have passed since the patient was employed.

If the physician wants to avoid this chain of events, he must not only judiciously evaluate the difficult patient to determine if there is a physiological explanation for the persistent problems, but also make a thorough evaluation to determine if the primary problem is psychological. If, as is true in the majority of cases, it is, he must be willing to treat the patient accordingly.

Differential Diagnosis of the Delayed Recovery Patient

When evaluating the patient who is experiencing a delayed recovery or who has a disability that is disproportionate to his injury, one must determine if the *primary* problem is physiological or psychological.

Physiological

The physician has a responsibility to evaluate the patient for a physiological explanation, but he should do this with thoughtfulness and restraint, realizing that this is the least likely cause of a disproportionate disability or delayed recovery in the compensation patient. Restraint is necessary not only from a financial viewpoint, but more importantly because performing unwarranted tests and procedures, obtaining too many medical consultations, or unnecessarily hospitalizing the patient tends to reinforce the patient's belief that something is seriously wrong.

Hirschfeld and Behan^{1,2} note that physicians might at times perform painful procedures (such as a myelogram) because of an unconscious desire to retaliate, as these patients often arouse negative feelings in the frustrated physician.

It should not be assumed that if one finds functional components on the examination there is no physical validity to the patient's complaints. In some cases, the patient might be attempting to convince the physician that something is wrong, as indeed it must be since healthy people do not display functional components on examination. The presence of functional components should alert the physician that the primary problem may well be psychological, and therefore the treatment must be altered accordingly.

Psychological

The vast majority of patients will have a psychological explanation for their continued physical misery. Primary and secondary gain that the patient might derive from his symptoms are perhaps the most influential factors contributing to a delayed recovery and persistent disability. Primary gain, an unconscious process, implies resolution of an internal conflict. Secondary gain allows the patient to avoid activity that is noxious to him, or gives him support from the environment that otherwise might not be forthcoming. Secondary gain usually has both conscious and unconscious elements.^{1,2,9,10} We have classed primary gain and secondary gain under the single heading of "reinforcers" to avoid confusion between the two terms. There frequently will be reinforcers for a delayed recovery in a compensable injury. A significant one could be deriving income from the disability (secondary gain). Others include receiving sympathy from significant people, receiving attention, escaping responsibility, and revenge against a company.¹¹ There are numerous "red flags" that have been found to be associated with an increased incidence of delayed recovery following a compensable injury. When present, these factors do not necessarily indicate that the patient will suffer a delayed recovery, but do suggest that he is at higher risk and should be followed carefully.

High-risk factors are the following:

1. Patient is receiving compensation for an injury.^{1,2,12}
2. Patient is the cause of an accident, rather than the victim.^{1,2}
3. Patient's medical visits increased prior to the accident.^{1,2}
4. Patient frequently cancels medical appointments.^{1,2}

5. Patient reports having had a feeling of impending doom prior to the accident.^{1,2,13}

6. Patient experiences nightmares about the accident.^{12,14}

7. Patient had a high absentee rate prior to injury.^{1,2}

8. Patient shops for doctor.^{1,2}

9. Patient demonstrates a reluctance to cooperate with treatment.^{1,2}

10. Litigation is pending.¹¹

11. Inconsistent or nonorganic physical findings are present.¹⁵

12. Patient invokes anger or dislike in the physician.^{1,2}

13. A history of alcoholism or drug abuse is elicited.^{5,16}

14. Patient's early dependency needs were not met (evidenced by history of starting work at a very young age or by being a later born child in a large family).^{4,14,17}

15. Patient has a family history of disability.¹⁷

16. Patient has experienced a divorce or other crises recently.^{14,16,18}

17. The disability is disproportionate to the injury.¹⁹

18. Patient is aged, and is concerned about his ability to continue working indefinitely and his inadequate retirement savings.^{14,20}

Neuroses

Compensation Neurosis

Compensation neurosis is a frequently misused catchall diagnosis that is not recognized by the *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition (*DSM III*). Compensation neurosis in the context of this article is best used in the situation where the reinforcers of the injury or disability outweigh the patient's desire to get better, and the patient thus suffers a delayed recovery. This general diagnosis would be inclusive of several *DSM III* diagnoses, such as somatoform disorder (300.81), conversion type of hysterical neurosis (300.11), psychogenic pain disorder (307.80), hypochondriasis (300.70), and psychological factors affecting a physical condition (316.00).^{15,21}

Case Report

Because of carelessness, a 21-year-old man caused a small explosion at the flour mill where he was employed, and suffered second-degree burns to his hand, flash burns to his eyes and a mild spinous ligament sprain of his back. During his three days of hospitalization, his parents were with him constantly,

expressing great concern regarding his well-being. Following discharge, he appeared to recover rapidly, receiving outpatient dressing changes for his hand and physical therapy for his back. After two weeks he was told that he could return to work on a restricted basis. The patient became very distraught and belligerent, saying that he could not yet possibly return to work. Although he had had no back pain for a week, he suddenly developed the recurrence of his pain. The patient and his mother became very threatening, filed a union complaint, obtained a lawyer and demanded a second medical opinion. His mother, who had praised his early medical care, became very hostile and accusatory. Despite the minimal burns on the dorsum of his hand, it was learned that she had been bathing, dressing, and caring for him as an invalid at home. A second opinion was obtained from an orthopedic surgeon, who found nothing extraordinary physiologically and agreed that this patient should return to work. The patient again became very distraught and asked for a third opinion. When he was told that this would be arranged, he decided not to have an additional examination, acquiesced, and returned to work. He had no problems performing his duties and recovered fully and uneventfully. It was subsequently learned that the patient had intended to return to college during the time he had anticipated being off work on compensation. In addition, it was apparent that the patient was still very dependent on his mother, and was deriving much satisfaction from her care and attention. The reinforcers in this case were both compensation and attention, and a prolonged disability was possibly prevented by a rapid and judicious return to work.

Traumatic Neurosis

In some cases of trauma, the patient is so fearful of returning to the job that he will hold onto physical symptoms as a justification for not returning to work. Traumatic neurosis (*DSM III* 308.30) is manifested by recurrent nightmares about the accident, anxiety, and diminished interest in one or more significant activities. The patient might demonstrate an exaggerated startle response, experience trouble concentrating, and wish to avoid activities that might remind him of the accident. In many cases, the patient will deny having fear about returning to work where the injury occurred, even to himself. If the physician recognizes that this is the underlying problem behind the patient's holding onto symptoms, he can successfully aid the patient in returning to work. Because patients will not generally volunteer information about symptoms such as nightmares and irritability, it is imperative to have an index of suspicion and to

question the patient concerning these issues. In the case of a traumatic neurosis it is helpful to encourage the patient to recount the incident of the accident repeatedly, as this enables him to work through the fear. Reassurance and supportive counseling during the initial period after return to work are also helpful. It is helpful for the patient to be seen on the first day following his return to work so that support may be given.

Case Report

While standing beside his truck, a 61-year-old cement truck driver was suddenly buried up to his neck in dirt when a landfill on which his truck was parked caved in. Because of the quick efforts of co-workers he escaped with only contused ribs. Although examination of his chest and radiographic findings were normal, he complained bitterly of rib pain and did not work for one week. He was noted to be quite shaken up about the accident. When seen on the follow-up visit he insisted he could not return to work because of excruciating rib pain, which he stated was keeping him from sleeping. His examination was still normal and he was noted to move, gesture, and breathe without apparent distress. Further questioning revealed that he was experiencing nightmares, that he felt anxious, and was extremely irritable. Despite these clues, he denied fright about returning to work. The patient was reassured that his pain would resolve eventually and was not permanent. He was asked to recount the accident several times, and was told that his nightmares would resolve. The patient was advised to remain as active as possible, rather than at bedrest as he had been, as activity would hasten the healing. The patient's painful rib area was taped locally, and he was returned to work despite his obvious reluctance. He was seen twice during the initial period of return to work; the accident was again discussed at length, and by the second and final visit after return to work, he reported that his pain had resolved.

Depression

If a person has a underlying depression he will very likely have a delayed recovery from an injury.^{1,2,20} It is important to recognize the depression and treat it concurrently. The depressed patient is more likely to suffer an injury at work because of psychomotor retardation, self-destructive tendencies, and inattention to external stimuli. The depressed patient will generally have a sleep disturbance, usually manifested by early morning awakening, a recent weight loss, constipation, difficulty concentrating, and decreased activity levels. He also might report decreased libido,

episodes of tearfulness, and suicidal ideation (*DSM III* 296.2 & 3).²¹

Case Report

A 28-year-old man was seen for persistent back pain for which he had been off work for three months. He had an excellent work history with only infrequent absenteeism during his 10 years of employment. Initially the patient had been treated by the company physician, who had informed the patient that he had strained some back muscles, and placed him off work and at bedrest for one week. He did not improve, however, and the physician could find no objective evidence of back pathology during the month that he followed up the patient. He referred the patient to an orthopedic surgeon for a second opinion, and this physician also thought that there were no physical findings of pathology, although he noted nonorganic components to the examination. He released the patient to return to work, but the patient refused to return, stating that he hurt too much. The patient was then informed by both physicians that they thought that nothing was wrong with him. In anger, he filed a union complaint, insisting that something was wrong with his back, and he continued to remain off work for an additional month. On observation at his third medical evaluation, the patient was stooped over in a camptocormia position (posture characterized by flexion of the hips and trunk, considered pathognomonic for psychogenic back pain²²). During the history, however, he revealed that he was not sleeping well, awakened every morning at 4 A.M., was constipated, and had lost 12 lb. in the past few months. He was spending most of his day in bed. When asked if he had been under any emotional stress, he volunteered that his father had died unexpectedly four days prior to his development of back pain. Except for numerous nonorganic physical signs and tense back muscles being noted, his physical examination was normal.

The patient's primary problem was not his back pain, but rather his depression. Treatment involved reassuring the patient that there was indeed something wrong with him, acknowledging that he felt terrible and that he needed aggressive treatment for his back pain. He was further educated that his pain was being made worse by his bedrest and inactivity. The patient was seen once more that week for 15 to 20 minutes of additional supportive counseling, and was seen twice by the physical therapist, who performed with him vigorous back exercises for strength and flexibility and prescribed a home program that included a daily 30-minute walk. The patient was successfully released to full duty one week following his initial

evaluation, and when seen for his final follow-up appointment several weeks later, reported that he had had no further problems and was feeling much better. A key factor in the patient's success in returning to work rapidly was involvement of the company nurse, who made frequent checks on the patient at work, showing concern and sympathy.

Malingering

True malingering is rare, although many of the entities discussed previously are frequently mislabeled as malingering. Malingering is a judgment, not a diagnosis, and it is extremely hard to prove; even when one feels certain that a patient is malingering, it is almost always a therapeutic mistake to be confrontive with the patient. In the true malingerer, the most frequent personality makeup is that of the anti-social personality.¹⁴ The person is likely, therefore, to have a poor work attendance and performance record. If malingering is suspected, the patient should not be confronted, but instead be examined carefully and told in a concerned manner that his physical examination is normal, but that since he has the complaint, he should be certain to let the physician know if it persists. It is helpful to prescribe exercise (hence activity) for the affected limb or body part, and, if it is appropriate, to point out possible predisposing factors that might exacerbate his symptoms — such as obesity, poor strength, or lack of exercise — and to advise him to correct these. The key element of the treatment is that the patient should be returned to work (full duty) at all costs, so as not to start a cycle of disability. If the patient is malingering, he will invariably drop the matter, since he was unsuccessful initially.

Case Report

A 30-year-old man received a large settlement for a back injury sustained at work that supposedly left him permanently impaired and unable to perform manual labor. Six months later, he returned to the company stating that he had had no back pain for six months, was lifting weights, and wanted his job back. Several months after he resumed working, he came to our office with a complaint of excruciating back pain, and although he was quite histrionic about his pain in the examination room, he had been noted to demonstrate no discomfort during his 30-minute wait in the waiting room. The examination was normal except for exaggerated responses by the patient and numerous nonorganic physical signs being noted. The patient was informed in a concerned manner that his examination was normal but that since he had complaints

of pain he could perform some back exercises. He was advised to use ice for the pain and that activity would be beneficial, and that he could return in two weeks if his pain persisted. Despite much argument, he was released to work. The following day he called the company and requested to leave for several days, as he had been evicted from his apartment and needed to move his belongings. A similar incident occurred later that year, and he was again returned to work and told to remain active, much to his chagrin. The next day he called the company to report that he would be off for several days in order to undergo a tonsillectomy. It appeared that this man used fictitious symptoms in an attempt to be excused from work on workers' compensation when it suited his needs.

Taking a History

As soon as the physician identifies a delayed recovery, or when he is experiencing difficulty returning the patient to work, he should arrange to take a comprehensive history, which will serve him in uncovering the primary problem and will also allow him to establish rapport with the patient. One should have a knowledge of the natural course of a specific injury's recovery time so that one can recognize when a patient's recovery time is outside the norm. For example, 70% of the patients who suffer a low-back injury will recover in three weeks and 90%, within two months.

History of the Injury

The physician should have a clear understanding of how the patient views the accident and resulting injury, and he should also obtain information from the company regarding their account of what happened. Who caused the accident? What preceded it? The physician or nurse can obtain information from company nurses, safety managers, or personnel directors.

Medical History

Is there a history of hypochondriacal tendencies? How are the patient's appetite and weight? How is he sleeping? The patient who is depressed frequently will attribute his early morning awakening to pain. How is his sexual functioning? People with difficulties concerning sexuality may use an injury as an excuse to avoid sexual relations with their partner.²² What regular exercise did the patient perform prior to his injury, and what has he been doing to stay in shape since his injury? How is the patient spending his day when he is not working? Is he taking pain medication that might be contributing to depression? Is there a history of drug abuse or alcoholism?

Work History

What does the patient's job entail? Does he see himself as ever being able to return to his job? A surprising number of these patients will admit to viewing themselves as permanently disabled, even when their injuries may appear relatively minor to the physician. Is there litigation pending? Many patients will recover quickly once litigation has been settled, regardless of the outcome of the litigation.^{12,19} If litigation is pending, does the patient deny that he is concerned about the outcome, explaining instead that he isn't interested in money, but that he only wants to get his health back? Such a statement is a form of "la belle indifference," characteristic of hysteria.¹⁹

Family History

Are there problems at home? How is the family reacting to the patient's disability? It can be very significant if the patient appears to be deriving considerable secondary gain from his family, or if a family member also gets gratification from the patient's regression and dependency. Were one or both of the patient's parents disabled? Patients who experienced the early loss of a parent in childhood often have great dependency needs as adults and are at greater risk to suffer from depression.¹⁷

Mental Status

It is often appropriate to include at least a preliminary mental status examination when a patient is not responding to treatment. One recent study revealed that certain types of patients having a disproportionate disability were found to have significant and consistent signs in the routine mental status examination. One sign was an inability to establish categories in the similarities test, i.e., the patients misunderstood the question and instead of describing similarities of objects, describe the differences. They also showed a less consistent but noteworthy inability to do serial subtraction. In addition, these patients routinely were concrete in proverb interpretation although there was no indication of psychotic or schizophrenic disorders. (The "glass house" proverb evoked a "you would break the windows" response.²³

Physical Examination

The physician should attempt to discern if the patient's subjective complaints and incapacity are in concordance with the physician's objective findings. The camptocormia posture of the person with a back injury could indicate a psychogenic cause, as would the use of a cane or crutch for back pain, without evidence of extremity weakness. Stocking glove pat-

terns of sensory acuity loss or weakness are pathognomonic for hysteria. It is essential to note if patterns of pain follow dermatomes or have anatomical relevance, as this can be a subtle indication that the main problem may be emotional. Does pain persist in a digit or distal extremity after a digital block?

Because of the nebulous nature of low-back pain diagnosis, these patients are more predisposed to a delayed recovery. Waddell et al²⁴ have described five excellent nonorganic physical signs that should be included in the examination of all patients complaining of low-back pain; these signs, when present, would indicate that the patient's back pain is psychogenic in origin, rather than organic. These tests, which can be done rapidly, have been shown to be of excellent predictive value for success of chemonucleolysis of the patient with a herniated disc.²⁵

In addition, Ransford et al²⁶ developed a pain drawing to be completed by the patient with low-back pain, which, when scored using their system, has found to be of good predictive value in determining hypochondriasis and hysteria as measured on the Minnesota Multiphasic Personality Inventory (MMPI).

Extremity strength may be determined using equipment such as Cibex machines, available in many physical therapy departments. An electromyogram (EMG) with somatosensory testing may be helpful in discerning if there is true organic pathology.

Treatment

We must remember that disability can be a learned behavior, rather than due totally to physical impairment, and it is essential when treating these patients not to teach them to become disabled. These patients can be quite difficult to treat successfully since unconsciously and even at times consciously they need to hold on to their symptoms to relieve pain of another nature. Because they are threatened when a physician seems to be capable of helping them, they frequently are very hostile patients who do not give the physician the admiration and respect that he wants and expects from his patients. Bearing this in mind, it is important that the physician not get into hostile conflicts with the patient, but instead remain a concerned advocate, providing the patient with understanding and compassion and yet setting firm therapeutic goals. In dealing with open hostility from such a patient it is helpful for the physician to comment on the patient's anger and to inquire what it is about.

Who Should Treat?

Hirschfeld and Behan^{1,2} have indicated that the

delayed recovery patient is usually more successfully treated by the primary care physician than by a psychiatrist. Not only are there usually physical aspects that must be treated, but in addition the patient often feels there is a social stigma to being treated under such circumstances by a psychiatrist since most of these patients lack insight and deny that their problem is other than physical. However, the physician should not hesitate to consult a psychiatrist when necessary. One successful alternative is for the physician himself to obtain psychiatric supervision concerning the patient's treatment plan. This can often be accomplished by a telephone consultation with a psychiatrist.

Components of Treatment

There are four essential components of successful treatment of the patient with a delayed recovery due predominantly to psychological factors — vocational, physical activation, narcotic cessation, and relaxation training. It is not surprising that these are four of the same components that make up all good chronic pain programs.

Vocational

Early return to work (or no loss of work) is often the most essential part of treatment for a delayed recovery. It frequently is also the most painful part of the treatment, and, just as the physician expects to hear protests from a child who has been told he must have a painful injection, the physician should anticipate protests from this patient and should stand firm, just as he would when he urges painful but necessary treatment for other medical problems.

Work serves to remove one very important aspect of secondary gain, and to prevent leisure that can lead to "malignant boredom."²⁷ Work provides self-esteem, social contact, and acceptance in the community.²⁸ Even if the patient must have some physical restrictions, often he still will be able to perform many duties at his workplace. If the company has no restricted duty policy, then it might be helpful to contact the personnel manager or a key supervisor; oftentimes such companies are willing to allow restricted duty after being educated concerning the positive aspects of early return to work, rather than forced inactivity.

Other obvious benefits of working are that it prevents the physiological weakening associated with inactivity and that psychologically the patient who remains at work perceives that the injury is just temporary.

The patient returning to work should be told to

expect an increase in pain and fatigue, but that it is normal and will readily subside. If the patient's complaints persist, a job site evaluation by either the physician, if he desires, or by a physiotherapist can serve to identify problems and to suggest solutions such as changes in body mechanics.

Activation

Bed rest should be kept at a minimum. For example, most back injuries, including those with suspected herniated discs, only rarely require more than several days of bedrest. Bed rest results in rapid disuse atrophy, a decrease in the sense of well-being, and a general catabolic state.²⁹

It is helpful if the injured worker is treated as one would treat an injured athlete. The injured athlete is expected to control his weight, to develop strength and to maintain motor skills during his recovery. He must take a very active part in his treatment, participating in physical therapy and alternative exercise during convalescence, and usually by attending any athletic games in which he is unable to play.

A comprehensive reconditioning therapy program is helpful, especially as emphasis can be placed on correcting any concurrent physical factors that might have predisposed that patient to his injury, for example, poor strength, flexibility, or body mechanics. There are numerous studies correlating insufficient exercise, strength, and fitness with an increase in incidence of low-back pain and musculoskeletal injuries in general.^{16,31-32}

It is helpful for the patient to wear gym shorts and shoes to therapy, and for the therapists to avoid the use of hot packs, massage, ultrasound, and other passive forms of therapy that are appropriate for acute injuries, but not for those that are chronic. The therapy sessions should include strength and flexibility development, body mechanics training, and a general cardiovascular workout. Such stimulation, especially if depression is present, can provide these patients with an increased feeling of well-being. Therapy is usually provided during the early period of the patient's return to work. For those patients who have been disabled and unable to work for an extensive amount of time before evaluation (several weeks is often to be considered extensive) it is helpful to order daily physical therapy. Invariably the patient needs this for reconditioning and it is also helpful in simulating the routine of having to report to work everyday.

Cessation of Narcotics

Use of narcotics following most musculoskeletal injuries should be restricted to no more than one to two weeks at the maximum. Long-term use of these

drugs is detrimental, decreasing the patient's tolerance to pain, affecting mentation, and exacerbating depression. For most injuries that involve inflammation and/or spasm, ice is an excellent analgesic if applied directly for 15 to 20 minutes. The uncomfortable stinging resolves within five minutes of application, as the nerve endings numb. Anti-inflammatory medications and nonnarcotics may also be used when appropriate.

Relaxation

Frequently there is an element of somatization in musculoskeletal injuries, particularly those involving the lower back and the neck. The physician should recognize the presence of social or psychological factors that are aggravating a physiological ailment.¹⁸ (For example, a patient who is keeping chronic muscle tension in his back because of stress attributes the resulting pain to his back injury of three months ago.)

These patients will often benefit by relaxation training in the forms of audiovisual material, tapes, and biofeedback. Many communities now offer stress management courses which can be utilized.

One should attempt to educate the patient concerning his injury and the necessary treatment. Many of these patients have been receiving acute treatment (i.e., bed rest and analgesics) of their injury for an extended period before they are recognized as having a delayed recovery due to extraneous factors. They must be educated that continued bed rest and inactivity will not be helpful and that only by use of the injured part and by activity despite pain will they start to get better. If a patient is skeptical or hostile about increased activity such as return to work, point out that extended rest has not been of benefit up to that point, so maybe it is time for him to change his thinking about it.

If a reinforcer is readily identifiable in a particular patient, sometimes ingenuity may be used in an attempt to remove it. As an example, a elderly man was evaluated for persistent back pain that had prevented him from working at his sedentary job for three months (even though he worked out of his home, selling products by telephone). It became apparent that he was very isolated socially and greatly enjoyed all the contact he received from physical therapy and doctor visits. It was arranged for him to do volunteer work at the Veterans Administration Hospital, and he was rapidly able to give up his symptoms of pain.

The physician should set firm limits about the patient's cooperation in keeping appointments with his clinic and the physical therapist. Not infrequently

patients may become threatened when it appears that their symptoms may be taken away from them and deliberately miss appointments. This should be dealt with immediately, and the insurance company should be notified. During the next appointment, the reason the patient was unable to come should be discussed.

The patient should never be accused of malingering, no matter how positive the physician is that the complaints are fraudulent. It should be remembered that true conscious malingering is rare and that compensation neurosis can mimic malingering in many aspects.¹¹ If the patient's employer believes that the patient is malingering, it is helpful to dissuade and educate company representatives concerning this point, as it is impossible to return a hostile employee to a hostile company in such cases. If the physician must consult a specialist, he should be wary of one who reacts to a delayed recovery of a patient by giving excessive postponements in the return to work date, or who orders multiple tests, procedures, and surgery in response to a patient's delayed recovery,

especially when it cannot be explained physiologically.

A certain number of these patients will benefit from psychotherapy. Patients who continue to see their problem as solely physical should be dealt with by the practitioner. Candidates for psychotherapy are those who show insight and recognition that there is an emotional component to their symptoms. Those patients whose primary problem is blatantly due to a thought disorder should obviously undergo psychiatric evaluation.

Treatment of delayed recovery is not a well-defined science but rather an intuitive art. A few general rules can be helpful in the diagnosis and treatment, however. A thorough psychosocial history should be obtained. Return to work as soon as possible is essential. With awareness of this process, the physician can work with the company, the therapist, and other consulting physicians to minimize disability and to maximize recovery.

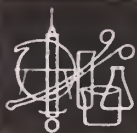
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Editorial

Bad Result Insurance

JAMES J. CICERO, M.D.*

MANY MALPRACTICE CASES are now being judged and awarded on the basis of bad results in spite of good and acceptable medical practice. In the past it was a personal insult for a physician to be sued for malpractice, since the implication was that the physician did not practice quality medicine. This is not the case presently, and because of this the medical profession must change its attitude toward malpractice cases.

Medicine is a game of percentages, and the art of medicine is making those percentages work to the patient's advantage. Clinical judgment is, therefore, improving those percentages on the basis of knowledge and skill, rather than cost to the patient for confirming tests. Since we are dealing with percentages, we must recognize that some cases will not go in the usual manner. Cases on the extreme of the bell-shaped curve will occur in every situation. When one truly looks at medicine, whether it is examining an abdomen or listening to a chest, we are basically determining what percentages are occurring in each situation. Understanding this concept gives us a perspective regarding bad results.

Malpractice is no longer a "bad" decision or an action on the part of the medical doctor. In recent years, the courts have decided that patients with poor results have the right to receive compensation. Since the physician's insurance company is frequently the only source of finances for that person, the courts have used that source in spite of evidence that the physician was not at fault. In these cases, the physician is a victim of the percentages which allow for an occasional bad result.

Originally, malpractice was, in truth, a determination of quality of practice. The reluctance of the physicians to take an active role in dealing with malpractice forced the legal profession to do so. Now physicians truly want to stop malpractice and are willing to testify and evaluate quality of care, but this is no longer only what we are dealing with.

Daily, the question arises how often do you test to prove your clinical judgment. Do you order Xrays? Do you order CBCs? Today, all the forces in health care are pushing the physician to cut costs. This can

be done easily by eliminating ancillary services. These, however, are also the actions which come back to haunt a physician when that case does not turn as he had predicted.

In areas of limited clinical judgment, expensive testing (CAT Scans in head injuries) is valuable, but the problem still exists as to how often and for how insignificant a case do we order these tests. Some cases will arise with seemingly insignificant trauma that later showed injury by CAT Scan. This does not mean that the physician or the health care system can afford to order CAT Scans for every minor injury. A potential bad-result situation is created for the physician evaluating that occasional case. If these cases go to court, that physician will think, "I wish I had ordered that test." In fact, in almost every malpractice suit, there always is an "I wish I had." "I should have had a surgical consult." "I should have taken an Xray." "I should have ordered that test." etc. In the court setting, a prosecuting attorney will always be able to find a physician who will testify to the fact that, "In this situation, I would have ordered such-and-such test." This is very easy to decide when one knows the results of the case one year later. I would also like to have that privilege for all the tests and Xrays I ordered which turned out negative. We have seen the previous rule of "standard of practice in your local area" go quickly out of acceptance. Instead of dealing with the question "did the physician act reasonably at that time", we now ask "what would we have wished we had done."

The problem the medical profession faces is that the courts are rewarding "bad results" with the only source of funds available to them — malpractice insurance. Judges are made aware of the insurance limits carried by the physician, and often make their compensation on that basis. Many cases are being awarded every year on the basis of the "poor patient" who needs funds and had a "bad result", which is to be expected in any percentage situation.

It is necessary for all physicians to change their attitude regarding being sued for malpractice. In all of the business world, being taken to court is a cost and hazard of doing business. With certain exceptions, it has little to do with the personal action of the businessman, but rather a result of the product produced.

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Although the businessman would have liked not to have been sued, he does not feel that he has violated his right to continue to do business in his present occupation.

Physicians must look at malpractice insurance similarly to car insurance. The insurance is purchased as a cost of driving a car and unfortunately accidents will happen, but the driver will continue to drive. Certainly, if he has an accident that is his fault, it must bother him significantly. However, the fact that his insurance company had to pay out damages does not make him stop driving.

Physicians must no longer feel that to be sued means they are anathema to their profession. Insurance companies keep records of the number of times a physician has been sued, even if the case was unfounded or dropped after interrogatories and even though there was no settlement and the case never went to court. The physician's malpractice insurance premiums go up and there's a permanent black mark on his record. This certainly is being proven guilty while still being innocent.

Physicians must adopt a "so what" attitude regarding these cases. If this is how the insurance companies want to keep score in their own arena, so be it. However, in the medical arena, score should be based on the quality of medical practice, relative to many factors, including results, costs, judgments, etc. The number of suits is not a valuable piece of information to collect for hospital privileges or society membership.

It well may be time for the state or county medical societies to seriously review all malpractice convictions and settlements and discipline members who practice poorly. We should truly accept the respon-

sibility of protecting the public against incompetent physicians. We have in actuality only given lip service to these actions and the legal profession has every right to condemn us for it.

The medical society should set up active medical practices committees which have the right and in fact the obligation to suspend county membership for those cases of true "bad practice". Physicians who have been sued and wish to clear their records would bring those cases to the medical society for judgment. If the medical society felt that poor practice truly occurred, it would discipline that member via a period of suspension. If it saw no malpractice, in spite of a settlement or bad result, the medical society could clear that physician of implied wrong doing. The courts and the insurance companies then would have a more accurate statistic to judge the physician's capabilities.

Appropriate court questioning could be "If you have been sued, have you brought these suits to the state medical society?" "Have you had your privileges in this society suspended because of this?" Not having brought these cases before the medical society in itself would understandably imply a certain amount of guilt. That, however, seems to be an acceptable alternative to the present system.

If the medical societies would assume this responsibility and act appropriately, disciplining those physicians whose actions warranted, the societies would immediately again assume a prominent and important role in the governing of medical practice in the state. Unblemished medical society membership would again be a valuable criteria for judgment of quality medical care.

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

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Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

prescribing, see complete prescribing information in
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WARNING:
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Indications: Concomitant use with other potassium-sparing agents such as spironolactone or amiloride. Further use in patients with progressive renal or hepatic dysfunction, hyperkalemia, or significantly elevated serum potassium. Hypersensitivity to either thiazide or other sulfonamide-derived drugs.

Contraindications: Do not use potassium supplements, dietary or otherwise, if hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is used, potassium tablets should not be used. Hyperkalemia has occurred and has been associated with cardiac irregularities. It is likely in the severely ill, with urine volume less than one liter per day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K⁺ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, or K⁺ intake. **Associated widened QRS complex or arrhythmias requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy is weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and thiazide may appear in breast milk. If their use is essential, the mother should stop nursing. Adequate information on use in nursing is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids, and during concurrent use with amphotericin B, corticosteroids or corticotropin [ACTH]). Periodic BUN and creatinine determinations should be made, especially in patients with early diabetes or those with suspected or confirmed renal insufficiency. Cumulative effects of the drug may develop in patients with impaired renal function. Thiazides should be used with caution in patients with impaired hepatic function. They can precipitate coma in patients with severe liver disease. Observe patients for possible blood dyscrasias (liver damage, other idiosyncratic reactions). Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic and hemolytic anemia have been reported with thiazides. Thiazides may cause manifestation of diabetes mellitus. The effects of oral anticoagulants may be increased when used concurrently with hydrochlorothiazide; dosage adjustments may be necessary. Clinically insignificant changes in arterial responsiveness to norepinephrine have been reported. Thiazides have also been shown to increase the relaxing effect of nondepolarizing muscle relaxants such as mivacurium. Triamterene is a weak folic acid antagonist. Do not use in blood studies in cirrhotics with splenomegaly. Antihypertensive effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. Triamterene has been found in renal stones in association with the other usual components. Therefore, 'Dyazide' should be used with caution in patients with histories of stone formation. A few occurrences of acute renal failure have been reported in patients on 'Dyazide' when treated with indomethacin. Therefore, caution is advised in administering nonsteroidal anti-inflammatory agents with 'Dyazide'. The following may occur: transient elevated BUN, creatinine or both, hyperglycemia and glycosuria (diabetic requirements may be altered), hyperuricemia and gout, hypokalemia (in hypokalemia), decreasing alkali reserve, possible metabolic acidosis. 'Dyazide' interferes with fluorescence measurement of quinidine. Hypokalemia is uncommon with 'Dyazide', but should it develop, corrective measures should be such as potassium supplementation or increased dietary intake of potassium-rich foods. Corrective measures should be used cautiously and serum potassium levels determined. Continue corrective measures and 'Dyazide' should be discontinued if laboratory studies reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Concurrent use of chlorpropamide may increase the risk of severe hypoglycemia. Serum PBI levels may decrease without signs of thyroid disease. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function.

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Thiazides reduce renal clearance of lithium and increase the risk of lithium toxicity.

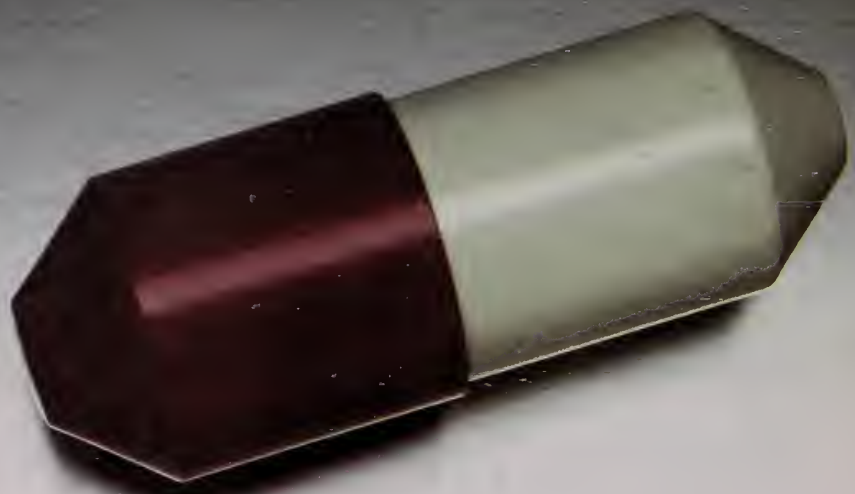
Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth, anaphylaxis, rash, urticaria, photosensitivity, and other dermatological conditions; nausea and vomiting, constipation, other gastrointestinal disturbances; postural hypotension (may be aggravated by alcohol, barbiturates, sedatives). Necrotizing vasculitis, paresthesias, icterus, xanthopsia, and respiratory distress including pneumonia and pulmonary edema, transient blurred vision, sialadenitis, and vertigo have occurred with thiazides alone. Triamterene has been found in renal stones in association with the other usual components. Rare incidents of acute interstitial nephritis have been reported. Impotence has been reported in a few patients on 'Dyazide', although a causal relationship has not been established.

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Fostering or Impeding Competition

Issues Associated with Exclusive Dealing Clauses in Health Care Plan Contracts

(First in a Two-Part Series on Health Plan Contracting)

This paper was prepared by the Minnesota Medical Association: Carol J. Kaemmerer, Director of Research, Division of Policy Analysis and Advocacy; Kathleen A. Meyerle, Legal Counsel and Director, Division of Policy Analysis and Advocacy; in cooperation with the Minneapolis law firm of Opperman and Paquin and the Minnesota Medical Services Corporation: Laura Grygar, Director of Marketing.

IN THE TWIN CITIES Metropolitan Area, various health care payors have begun to approach physicians with contracts that stipulate sole affiliation with that payor or limit future associations with other payors. This arrangement between the health care payor and the physician and/or clinic is usually reflected in an "exclusive dealing clause" in the payor's contract. However, some arrangements may be implied from negotiations or be discussed in supplemental correspondence between the payor and physicians or the payor and the HMO enrollees.

The purposes of this paper are to: evaluate this type of arrangement against the background of the policies of the Minnesota Medical Association, the legal environment, and current market trends. Health Maintenance Organizations (HMOs) have been the first type of health care payment mechanisms to offer this contract provision. Other types of health care plans such as Preferred Provider Organizations (PPOs) may embrace this strategy in the future. While this analysis is intended to address exclusive dealing clauses offered by any health care payment mechanism, for purposes of brevity, references are made to HMOs.

Association Policy

Neither the Minnesota Medical Association nor the American Medical Association (AMA) has policy which relates directly to exclusive dealing clauses. However, there are some overall concepts which have some bearing on the issue, such as freedom of choice — both on the part of the consumer and the provider.

A. Consumer Freedom of Choice

Both the MMA and the AMA support the right of any patient to choose either his or her own physician or health care delivery or financing plan which may carry with it specific restrictions concerning the source of care. In the MMA's position paper on competition and regulation, the Association calls on employers to make multiple plans available to employees and on Government to make options available to persons receiving governmental financial assistance for their health care.

To the extent that certain health care payors are successful in their efforts to have exclusive

agreements with physicians' offices, the access that consumers have to those physicians is limited. Since it is impractical for all but the largest employers to offer all of the health care plans as options, consumers may find it is impossible to affiliate with a plan that is both consistent with their own personal expectations for a health care plan and also which has providers that are convenient geographically. Consumers may find that because of the exclusivity agreement they must travel to see their physicians much farther than would seem necessary given the large supply of physicians in the Twin Cities Metropolitan Area.

B. Freedom of Choice For Providers

MMA policy notes that physicians, hospitals, and other providers should affiliate with health care plans which are consistent with their own practice style and philosophy. The underlying concepts here are that providers should not be coerced to affiliate with a plan which is inconsistent with their own style and philosophy, and also that they should have the opportunity to affiliate with those plans which are consistent. While the MMA has reaffirmed the importance of physicians continuing to render care to patients without primary regard to the individual's ability to pay, the Association's position is that physicians have the right to choose their patients on the basis of a number of factors, including source of payment.

In a market controlled by exclusivity arrangements, some physicians' rights to affiliate with those plans which are consistent with their own practice styles and philosophies are abridged. The physician who is already affiliated with other plans and who wishes to maintain that arrangement is precluded from joining a plan with an exclusive dealing clause. Likewise, physicians who have joined with a plan which has an exclusive dealing clause are precluded from joining other plans which are consistent with their own practice style and philosophy.

The exclusivity contract may also impair the physician's right to choose his or her patients. To the extent that a plan with an exclusivity clause

has made that physician or clinic the exclusive plan provider in a given area, it would be more difficult for that provider to turn away a plan patient. Likewise, to the extent that the plan is the physician's or clinic's only source of patients, it would be difficult financially to turn away a patient.

It should be understood that under Minnesota law, an HMO, as a health care payor, is considered to be a health care provider, much like a physician. State regulation ensures that those health care providers which assume a financial obligation to provide care by accepting capitation payments are able to fulfill their obligations to meet the health care needs of their enrollees. By contrast PPOs are subject to limited regulation, since they are considered to be elements of insurance companies (payors) rather than health care providers.

C. Pluralistic System

Both the Minnesota and the American Medical Associations have supported the concept of pluralism — that is, multiple types of health care financing mechanisms — in the health care system. In 1981, the Minnesota Medical Association articulated its support for the development of a competitive market for health care services in which decisions are made on the basis of quality and price.

Under the exclusivity arrangement, choices for both consumers and providers are limited, and the concept of pluralism is weakened. Likewise, this arrangement lessens the choice of the consumer directing the factors for consideration away from "quality and price" and toward the factor of availability. This is particularly ironic given the large number of providers available in the Twin Cities Metropolitan Area.

Legal Considerations

It appears that there are some circumstances in which an exclusive dealing clause associated with a health care payment mechanism could be judged to be in violation of anti-trust laws (§1 of the Federal Sherman Act and the Minnesota Antitrust Law). Exclusive arrangements including exclusive dealing, exclusive service, exclusive franchise, and exclusive distributorship contracts have often been the subject of anti-trust litigation.

With respect to Federal law, the U.S. Supreme Court has consistently chosen to rule that these are not per se violations (that is, they are not inherently anti-

competitive), and has held that all exclusive dealing arrangements must be judged under the "rule of reason." On the other hand, the Minnesota state anti-trust law which prohibits "contracts ... between two or more persons refusing to deal with another person..." arguably forbids such exclusive arrangements under all circumstances.

A. The Federal Sherman Act

Generally, under Federal law, exclusive dealing clauses will be found legal under the rule of reason analysis if there are legitimate purposes for the provision and the adverse effect on competition is not substantial. Competition, however, is effected to a greater or lesser degree in every case because where one entity has the exclusive right to use the services of another person, the first entity's competitors are foreclosed from obtaining those services. If those services are not necessary to the other competitors' businesses or if they may have other sources of similar quality to which to turn for those services, the effect on competition is light and the restriction will be upheld. Conversely, where the service is necessary to the competitors' business and there are few alternative sources to which to turn for the services, then the clause is likely to be found illegal, in violation of §1 of the Sherman Act.

The legality of any given contractual provision between an HMO and a clinic by which the clinic agrees to provide services to an HMO exclusively must be determined on a case-by-case basis under the rule of reason. The factors to be considered in the analysis are noted below:

1. Effect on Competition

(a) *Determination of Relevant Markets.* To determine the effect on competition in a given case, the first consideration is to define the relevant market to determine what competition is at issue. A relevant market has two dimensions — a product market and a geographic market. The product market, in this case, is prepaid health care — that is, other HMOs.

The geographic market is defined by determining the physical area in which the competitors compete or would compete, if the restraint were not in place. While a geographic market can be nationwide or larger, it can also be limited to a single town or county. Additionally, there may be relevant geographic submarkets if there are discrete areas in which the competitors compete or would compete for enrollees, were this re-

straint not in place. Because HMOs can compete in many discrete areas only through clinics which draw their patients from a certain geographic radius, each of those areas are arguably separate geographic markets or submarkets. Of course, the size and location of the relevant geographic market or submarket will vary depending on the location of the clinic that enters into an exclusive agreement and the nature of the clinic's practice. For example, a highly specialized clinic in Minneapolis may draw enrollees from throughout the metropolitan area, making the entire metropolitan the relevant geographic market. Likewise, a clinic in Bemidji will draw patients from the surrounding counties, making that area the relevant geographic market. There are no hard and fast rules as to how broad or limited a market might be. In each case, the definition of the relevant market is a question of fact for a jury.

- (b) *Proportion of Foreclosure.* Once the relevant product market and geographic market or submarkets are identified, the inquiry turns to determining the proportion of competition in those markets foreclosed by the exclusive agreement. In a rural, out-state area where there is but a single clinic within a relevant geographic market, an HMO's exclusive agreement with that clinic would totally foreclose the HMO's competitors from competing in that area. Hence, foreclosure would be 100%. On the other hand, in the Twin Cities Metropolitan Area, where there are scores of clinics, one clinic's exclusive agreement with an HMO would foreclose relatively little competition, amounting to a few percentage points or less, since competing HMOs could seek services from many other sources.
- (c) *Substantiality.* Once the proportion of the market foreclosure is determined, the next inquiry is whether that proportion is substantial. Again, there are no hard and fast rules, and nothing approaching mathematical precision. However, generally, anything over 50% is "dangerous." As a rule of thumb, any contractual arrangement with an HMO which forecloses competing HMOs from using the services of 20% or more of the physicians in a given geographic market should be closely scrutinized.

- 2. *Purpose of the Clause.* Often there are pro-competitive reasons for entering into exclusive dealing arrangements which are relevant to the legal analysis. Some legal arguments which might be considered in this regard include:

- * enhancing competition by increasing the quality of care available; and
- * allowing certain cost containment practices not available without an exclusive agreement.

Rationales which have been rejected by the courts as speculative or insignificant include:

- * avoiding conflicts of interest where a physician influences a patient's choice of HMO based on the doctor's financial interests;
- * availability of one HMO's marketing plans and other confidential information to a competing HMO via the clinic's files; and
- * subsidization of low-profit HMO enrollees by over-servicing higher profit HMO enrollees.

B. *The Minnesota Antitrust Law*

The Minnesota Antitrust Law, enacted in 1971, forbids all such exclusive arrangements without regard to the effect on competition or the purpose of the provision. However, to date, there has been no judicial interpretation of this statute. Thus, whether the courts will construe the statute literally, or interpret it to forbid only unreasonable exclusive arrangements is yet to be determined. It is the position of the Antitrust Division of the Minnesota Attorney General's office that Minnesota law prohibits only unreasonable exclusive provisions and that, as under Federal law, legality must be judged on a case by case basis under a rule of reason type analysis.

C. *Summary of Legal Factors*

Under federal law the legality of an exclusive dealing clause is judged on a case by case basis. If the amount of competition foreclosed is slight and there are legitimate purposes for the provision, it is legal. On the other hand, if a substantial percentage of physicians within a given area (50% plus) enter into such arrangements there will be a significant risk of an antitrust violation. State law, arguably, is even more strict and may forbid all such exclusive arrangements. However, there has been no court decision interpreting the state law and the Minnesota Attorney General has chosen to interpret it as being substantially the same as the federal law.

Finally, it should be noted that the above analysis pertains to the existence of an exclusive deal-

ing clause in a clinic's contract with an HMO, rather than the practice of a clinic which chooses to deal with only one HMO (or not to deal with HMOs at all). The antitrust laws contain no prohibition whatsoever on a clinic's unilateral determination to deal only with a single HMO.

Minnesota's Competitive Environment

Both the Minnesota Medical Association and the Minnesota State Legislature have worked over the past several years to facilitate competition within the health care system in our state. Legislation facilitating the development of Health Maintenance Organizations and Preferred Provider Organizations, amendments equalizing the requirements for Health Maintenance Organizations and Indemnity Plans, and the repeal of the State's Certificate of Need Law are all indicative of the State's commitment to the fostering of competition and pluralism within the system.

The exclusivity clause seems designed to reduce diversity in the system, and seems, therefore to be anti-competitive. The reduction of diversity would occur as small group practices or solo practitioners become tied into networks with only one source of payment. Depending on the geographic location of the patient, the health care provider choices may be seriously reduced or eliminated.

Market Trends

Virtually every development of the past five years related to alternative delivery systems has carried with it a consideration of cost reduction. Recently free-standing surgery centers, urgicenters, store front/shopping mall clinics and same day surgery programs within hospitals have proliferated. These are visible manifestations of providers responding to a publicly held notion that health care costs as a percentage of GNP are growing too rapidly and must be contained.

There are less obvious but no less pervasive adjustments being made in the types of third-party payment mechanisms for health care that are offered to benefit managers and ultimately employee groups. The promise of cost-containment has been a very powerful tool, allowing HMOs to increase their marketshare of employees of major and mid-size employers. In response, indemnity programs have reshaped their pricing structures by dropping some historically offered services and requesting fee discounts of participating physicians. Price sensitivity on the part of buyers of health care has been demonstrated by the experiences of HMOs which report that enrollees have changed carriers for as little as a dollar difference in monthly premiums. Some HMOs in the Twin Cities have also demonstrated their understanding of

price sensitivity while maximizing profits by pricing their product just under prevailing rates of the lowest cost indemnity coverage.

In the past several years, the Twin Cities marketplace has experienced unprecedented competition among HMO organizations. Many providers affiliate with several HMOs, thus preserving the option of choice for patients. In these cases, patient-physician relationships could remain unaffected despite a decision at the place of employment to discontinue one plan and offer another. However, recently it has become apparent that some HMOs are seeking to establish exclusive relationships with providers to preclude their participation with other plans. As a result, physician access to patients and vice versa is limited.

While patient convenience may be impaired, the decision of a clinic to affiliate with a single plan can dramatically reduce the amount of paperwork and claims processing within a medical office. Since the processing, accountability and paperwork requirements of each payor differ, affiliation often requires additional staffing computerization. These overhead costs are often passed along to the patient.

Under a classic economic model, unregulated competition will ultimately result in price competition, thus forcing prices naturally downward. The system achieves equilibrium when all needs are being met by a given number of third party payors for a given amount of money. On the other hand, with access to payor plans limited by imposed restriction (such as exclusive dealing clauses) a regulated model is operational. The flow of patients to providers through the vehicle of third party payors is artificially manipulated. Without direct competition among practices, price competition may be blunted.

To date, use of exclusive clauses has been limited to Twin Cities clinics. When questioned, one payor has indicated that the exclusive clause is not likely to appear in contracts offered outside the Twin Cities, although the opinion rendered does not represent official corporate policy. In reality, this issue has probably not been resolved in relationship to greater Minnesota affiliations.

Summary

Physicians who are requested to enter into exclusive dealing contracts with HMOs or other entities have many factors to consider. The assessment of whether it is an appropriate action for a given physician or clinic to enter into such arrangement should be based on a careful assessment of the clinic's geographic location and percent of market share to determine legal implications, and an evaluation of the marketplace in general.

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TEN YEARS AGO, Medicare's PSRO program began its review of hospital utilization and quality of care in Minnesota through the Foundation for Health Care Evaluation. The government delegated to the Foundation a controversial, labor-intensive prescription for review. This program was modified over the years throughout the country but eventually succumbed to charges of ineffectiveness. Today's successor program under the Professional Review Organization (PRO) is another effort by Congress to examine Medicare's cost effectiveness through physician peer review. Senator Durenberger, author of the bill establishing PROs, calls it "one last chance for physicians." The Health Care Financing Administration (HCFA) is determined not to let the PRO program fall victim to the same criticisms as the PSRO program, namely, that it was ineffective and difficult to evaluate benefits. Thus, it developed specific, standardized review programs and performance-based contracts with physician peer review organizations. Government regulations have specified the number and nature of reviews to take place, when they will occur, in some cases where they will occur, and the consequences which will accompany any negative review decision.

PRO contracts nationwide specify the degree of performance or targets for utilization and quality of care review in pre-determined areas such as certain outpatient procedures, postoperative complications, unnecessary admissions and the now infamous "avoidable" deaths. Each physician review organization (such as the Foundation) and other review organizations wanting to contract for PRO review had to address each required component in order to minimally qualify as a contractor. The Foundation did so with the aid of numerous task forces of physicians and hospital representatives. As it did with the original PSRO program, the Foundation task forces sought as much flexibility as could be gained under the PRO contract.

The Foundation could not change the fact that hospitals bear the cost of copying medical records, but it did develop a conservative approach to requesting those copies. Likewise, the category and title "avoidable deaths" couldn't be changed, but the task

forces did identify areas to focus review attention in the management of hip fractures after having studied a host of possible other topics for this category. Retrospective payment denial is an undesirable, if not punitive aspect of the PRO program, which the Foundation sought to minimize through a preadmission screening program.

The Foundation has been recently accused of instigating beneficiary notices of PRO review denials when in fact this notification is a requirement under the PRO regulations. We were concerned about the possible implications of this notice to all our physicians. The wording of our letter includes only what is minimally required for proper notice. Our physician-sponsored, peer review program remains sensitive to the complexities of medical care delivery in its review programs, reflecting that sensitivity in our case-by-case consideration of medical necessity. The Foundation provides mechanism for appeals of those decisions to further assure fairness to the patients and to the physicians.

Representatives from the Foundation and its subcontractor, the Professional Services Quality Council of Minnesota (PSQCM), recently met with Senator Durenberger to report on PRO implementation. Some of the issues discussed were: the burden of review requirements on small hospitals, the waiver of liability regulations, beneficiary notices, preadmission screening, confidentiality regulations (not as yet final), the minimal time allowed for program implementation and the lack of a definitive PRO evaluation methodology. Some of these issues have been raised by physicians and hospitals to the Senator, as well as to the Foundation and warrant further elaboration here.

The evaluation of PRO performance in the context of having targets for reductions of hospital admissions and other areas have been widely publicized. As stated previously, the Health Care Financing Administration must have a program that can tangibly demonstrate its effectiveness nationwide. HCFA administrator, Dr. Carolyn Davis, has emphatically stated that PROs have performance targets to be strived for within their contracts, not absolute quotas. Having completed contract negotiations with the assumption

that targets, not quotas, comprise the basis of the contract, we have made plans and decisions accordingly. We realize, however, that in two years, assumptions may change. Perhaps even the HCFA administrator who can now be appointed by the President may change. In any event, our operation will not be swayed in favor of less attention to case-by-case necessity determinations.

Preadmission screening has been widely discussed in the medical community. Although this process is over two years old, some areas of Minnesota have only a few months' experience with the concept. While the majority of admissions will be medically appropriate, there are numerous instances where for convenience sake (physician and/or patient), hospital admission is preferable to outpatient diagnosis and treatment. Congress and the public are demanding loud and clear that unnecessary expenditures in medicine be ended. Not surprisingly, each individual's tolerance for cost inefficiency increases greatly when their own or their family's care is occasioned. Time and education may help resolve this dilemma, but for the time being, we shall all feel a bit uncomfortable.

Some practitioners believe that the Foundation has absolutely mandated the performance of certain procedures on an ambulatory or outpatient basis in its preadmission screening program. In fact, procedures on the outpatient list are procedures that can be safely performed outpatient where the patient's medical condition, pre- and postoperatively permits. These lists have come from specialty societies and approved by many other physicians. We are currently re-evaluating criteria for inguinal hernia which is a procedure that can in some cases be safely performed

outpatient and will continue to seek the opinion of the Minnesota Chapter of the American College of Surgeons.

For the past decade and perhaps more so in our evolving competitive health care environment, external review of medical practice will influence certain aspects of health care delivery. But these external factors never will absolve physicians from exercising good professional judgement. With this as foremost in our practice and with a fair, broad-based peer review system, our liability in the provision of medical care remains as it always has been, neither heightened nor lowered. However, as practitioners, we must continue to be concerned about the confidentiality of profiles and other information accumulated and regulated by law within the Medicare program. Since final regulations on this subject have not been forthcoming, the Foundation anxiously awaits its final instructions on how data will be released under the PRO program. We are resolved that whatever the final regulations prescribe, we shall continue to be sensitive in our interpretations of medical practice patterns.

These are difficult times for our patient and physician community. While at times one may be frustrated, even angered by PRO regulations or by the Foundation having to carry them out, one should consider the alternatives. Involvement of you as a physician in the review process, on Foundation or PSQCM committees will strengthen the peer program and provide greater understanding of the problems. I leave you with one thought: "Don't kill the messenger"; the message could be delivered a lot less kindly.

China CME

North Memorial Medical Center in conjunction with the Minneapolis Clinic of Psychiatry and Neurology is co-sponsoring a medical study tour of China from October 20 through November 7, 1984. The tour will be eligible for CME credits and is designed to be of interest to specialists in a variety of fields including neurology, internal medicine, family practice, cardiology, obstetrics, gynecology and psychiatry. Cost for the 19 days all inclusive will be \$3285. Further information contact Ivan L. Brodsky, M.D. at North Memorial Medical Center, Department of Neurology.

Letter to the Editor

Dear Dick:

I read with great interest your article in the September issue of *Minnesota Medicine*. You are doing a marvelous job of evaluating our environment and an equally marvelous job of putting it into good English. Congratulations on a job well done again.

D.K. Ohrt, M.D.
Chairman of the Board of Trustees

WHAT'S THE ONE WAY
TO FIND OUT IF YOUR
INVESTMENT PORTFOLIO
IS AS HEALTHY
AS POSSIBLE?

Book Report

OBESITY by George A. Bray, M.D.

This 52-page book, a Scope Publication by Upjohn, is an excellent treatise on obesity: thoroughly scientific yet easily understandable by most lay readers.

The book recalls, incidentally, that even Hippocrates, about 2400 years ago, noted that "sudden death is more common in those who are naturally fat than in the lean."

The book format consists of specific sections, as listed in the Contents, including the treatment of obesity by diet, as well as by the numerous surgical procedures available. Included is a valuable guideline chart of obesity, based on height and weight. Besides charts there are graphic figures and concise tables, some enhanced by color contrast.

This excellent little volume should be an integral part of every dieter's compendium. It can probably be

obtained by physicians from Upjohn Company at little or no cost. A hard cover might cost a few dollars.

Carl O. Rice, M.D.
Editor Emeritus

1985 MMA Annual Meeting to be Held at the St. Paul Radisson

The Board approved a site change for the MMA Annual Meeting to be held May 8-10, 1985. MMA will meet at the St. Paul Radisson instead of the Radisson South in Bloomington.

GET A SECOND OPINION.

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MMIE Malpractice Claim Review

General Surgery
MMIE Risk Management Committee
Frank E. Johnson, M.D.
Chairman

Allegation

Negligent treatment of an acromioclavicular dislocation.

Facts of Case

The patient, an 18-year-old woman, was hospitalized with a right acromioclavicular dislocation sustained in an auto accident. On December 2, Dr. S, a general surgeon, surgically repaired the separation with two threaded wires. The patient had an uneventful postoperative course and was discharged with her right arm in a sling.

On December 11, Xrays showed the wires in good position. The sutures were removed and shoulder immobilization was applied. Two weeks later, according to Dr. S, the patient was instructed to begin "mild active exercises". No documentation of this advice was made in the medical record.

The patient was seen again on January 11 with swelling and marked reduction in range of motion. She was sent to physical therapy for active/passive exercises of the right elbow and shoulder. By February 8, the patient showed definite improvement, but was still lacking 25-30 degrees abduction. X-rays revealed that one of the wires had broken; the other wire was holding satisfactorily.

The intact wire and half of the broken wire were removed by Dr. S on March 17. The distal portion of the broken wire was left when Dr. S determined that it was lodged in the sternum and would require considerable dissection to reach.

In postoperative examinations, the clavicle was again displaced and the patient complained of pain and decreased range of motion. In August, the patient consulted an orthopedic surgeon who surgically removed the rest of the broken wire and repaired the separation. Following this surgery, the patient continued to have limitation in shoulder movement and was given an 8% permanent partial disability rating of the right arm.

Disposition

\$10,000 settlement.

Reasons for Settlement

The patient's attorney obtained an expert opinion which stated that:

1. The standard of care required complete immobilization of the shoulder for 8 weeks following insertion of the wires and Dr. S was negligent in prescribing exercise on December 11;
2. The exercises begun on December 11 caused the wire to break which, in turn, prevented proper healing of the dislocation and resulted in the residual limitation of motion;
3. It was also negligent of Dr. S to leave the broken wire embedded in the sternum because of the risk of the wire migrating, and this negligence contributed to the need for a third surgery; and
4. The patient would probably have had a significantly improved outcome if she had been properly treated.

GENERAL SURGERY

An expert reviewing the case for the defense felt that, under the circumstances, it was not negligent for Dr. S to leave the broken wire imbedded in the sternum. However, he agreed that general immobilization is necessary in the early stages of treatment following repair of a dislocation. He stated that limited range of motion exercises may have been appropriate on December 11, but Dr. S's medical records did not indicate what was ordered for the patient. While Dr. S believed he had "most likely" ordered only wrist and elbow exercise initially, he was unable to recall his instructions. The patient claimed that extensive shoulder exercise was prescribed and Dr. S was unable to refute the allegation that this negligent order was given.

Risk Management Comment

The defense of malpractice claims frequently hinges on the completeness of the medical record to prove what was, or was not, told to the patient. In Minnesota, claims by adults may be asserted as long as two years after treatment. Physicians, seeing many patients during that time, rarely remember the specific advice given to one patient. Patients, however, are more likely to recall particular details of what may have been their only medical treatment. Thorough, contemporaneous documentation of the advice given to patients will help defend physicians against their own loss of memory or faulty patient recall if a malpractice claim is asserted involving advice that was arguably medically appropriate.

The Park Nicollet Medical Foundation cordially invites you to attend the Second Annual **Terry C. Shackelford Memorial Lecture** at 6 P.M. on Friday, October 26, 1984
Lutheran Brotherhood Auditorium 625 4th Avenue South — Minneapolis, MN 55415
"Medical Manpower — and other Challenges for the 80s"

Alvin Tarlov, M.D., President, speaker
Kaiser Family Foundation
Oakland, California

RSVP 927-3141, Foundation Office, Park-Nicollet Clinic.

Office Management of Common Orthopaedic Problems

Date: February 23-March 2, 1985
Location: Orlando, Florida
Sponsors: Minnesota Medical Association and Minnesota Orthopaedic Society
Content: Program will cover broad spectrum of topics associated with office evaluation of common orthopaedic problems. Faculty consists of orthopaedists specializing in pediatrics, sports medicine and problems of foot, shoulder and hand.

For Credits & Rates Contact: Eugenia C. Kassir, 2221 University Avenue SE — Suite 400, Minneapolis, MN 55414, (612) 378-1875.

Interspecialty Council Highlights

Current Activities of the Interspecialty Council

Minnesota Medical Services Corporation (MMSC)

Laura Grygar, Director of Marketing for the Minnesota Medical Services Corporation, spoke to the Interspecialty Council regarding the purpose and work of the corporation. Highlights of MMSC's first year included the National Eye Month campaign for the MN Academy of Ophthalmology and Otolaryngology. This project was a perfect example demonstrating the versatility of MMSC . . . working for specialty societies, as well as individual physicians and clinics.

Other areas of service included market research, market planning, practice planning, radio and T.V. work, the Physicians Placement Service, seminars on timely topics of concern to physicians and physician needs surveys.

The unique aspects of MMSC were brought to life for the members of the Council from their first presentation one year ago where the members were first introduced to MMSC to this annual summary of what has been accomplished by this service oriented for-profit entity dedicated to the physicians of Minnesota.

Physician Advertising

The unknown and formerly unethical area of physician advertising was explored by the Council in view of the new competitive marketplace physicians have entered. The AMA Judicial Opinion on Advertising and Publicity was reviewed . . . both historically and currently. A variety of ads were distributed to illustrate the broad use of advertising by health care providers and the differences in approach to the competition that continues to grow.

Three points evolving from the discussion included the need for physicians to talk the language of the public — to demystify the medical jargon common to physicians but frightening and misunderstood by the public; differentiate the product and service of physicians from other competing health care providers to make clear the benefits to the public when choosing health care; and the benefits derived from public relations campaigns which lead to word of mouth promotion and approximately 75% of the business as opposed to expensive advertising campaigns which produced only 25% of the business.

Investigation of Iridology

An ad hoc subcommittee on iridology created by the Interspecialty Council submitted their report to the Council concluding that the practice of Iridology was without scientific basis and has the significant potential for false positive and false negative diagnoses. Iridology and Iridologists claim they can determine health status, chemical and nutritional needs, drug accumulation and response to therapy by examining a patient's iris. This and other questionable health care practices have been addressed by the Council in the past and will continue to be examined in the future.

Chelation Therapy

An ad hoc subcommittee created to examine Chelation Therapy submitted their report to the Interspecialty Council. The subcommittee reviewed all available reference material pertaining to Chelation Therapy. Special consideration was given to the report issued by the Ad Hoc Committee on Chelation Therapy of the Hennepin County Medical Society. The ISC subcommittee supported the conclusions found in the HCMS report which stated, "The use of Na₂EDTA to treat atherosclerosis is not supported by the available data . . . has no scientific basis and is not an acceptable therapy for this disease."

The recommendation of this report and the report on Iridology will be submitted to the

INTERSPECIALTY COUNCIL

Board of Trustees by the Interspecialty Council for consideration as the official MMA position on these issues.

Task Force on Circumcision Education

The 1984 MMA House of Delegates passed a resolution which says the:

"MMA initiate an educational program for physicians and patients that will address the issue of circumcision and stress the absence of any defined medical indications for infant circumcision."

The Interspecialty Council will create a task force to develop an educational program on circumcision. The task force will include members representing Family Physicians, Obstetrics and Gynecology, Pediatrics and Urology. Robert Avandt, M.D. will chair the committee.

Brain Damage in Modern Boxers

The issue of brain damage in boxers was brought to the Interspecialty council by a physician serving his local Golden Gloves Boxing Association and after having read the articles published in *JAMA*, May 1984. The Interspecialty Council will establish an ad hoc committee on boxing to review and determine the best position to be taken or considered by organized medicine. The specialties serving on this committee include neurosurgery, neurology, sports medicine, pediatrics, psychiatry and neurophysiology. Two members of the Resource Group on Sports Medicine will also be asked to serve.

Hospital Privileges

A new law passed in the District of Columbia regarding hospital privileges for non-physician health providers was discussed by the Interspecialty Council.

The law prohibits non-physician professionals from being denied clinical privileges and staff positions at institutions that offer services which can be performed by non-physician professional. The law would include certified nurse midwives, certified nurse practitioners, podiatrists, psychologists and certified nurse anesthetists.

The Interspecialty Council will continue to watch vigilantly issues which have the potential to change physician practice style in order to keep the physicians of Minnesota informed.

If you have any questions concerning the above, please contact your Interspecialty Council representative.

Interspecialty Council Representatives

MN Allergy Society
William Schoenwetter, M.D., 612/927-3091

MN Society of Anesthesiologists
Eldore B. Nash, M.D., 612/520-5370

MN Dermatologic Society
John Stansbury, M.D., 612/339-3095

MN Chapter, American College of Emergency Physicians
James R. Bishop, M.D., 612/924-5000

MN Academy of Family Physicians
John Sutherland, M.D., 612/373-8539

MN Component, American Society of Internal Medicine
Paul F. Bowlin, M.D., 612/338-0705

MN Society of Internal Medicine
Robert Lindell, M.D., (612) 298-8000

MN Chapter, American College of Physicians
James H. Kelly, M.D., 612/252-5131

MN Neurosurgical Society
Burton Onofrio, M.D., 507/284-2611

MN Society of Neurological Sciences
John Gates, M.D., 612/221-3700

Association of Neurologists of Minnesota
Lawrence Schut, M.D., 612/725-6767

MN Obstetrical and Gynecological Society
Charles J. McCarthy, M.D., 612/227-9141

North Central Occupational Medical Association
David Zanick, M.D., 612/726-1771

MN Academy of Ophthalmology & Otolaryngology
George L. Adams, M.D. 612/373-8846 — OTO
James Trautmann, M.D., 507/284-2511 — OPH

INTERSPECIALTY COUNCIL

Interspecialty Council Representatives (continued)

Mn Association of Ophthalmology Raymond Croissant, M.D., 612/927-7138	MN Psychiatric Society M.J. Martin, M.D., 507/284-2933
Minnesota State Orthopedic Society Rudolph Klassen, M.D., 507/284-3662	MN Radiological Society John Tobin, M.D., (612) 786-9460
MN Society of Clinical Pathologists Richard W. Anderson, M.D., 612/221-1719	MN Chapter, American College of Surgeons John Culligan, M.D., 612/227-7564
MN Chapter, American Academy of Pediatrics Lowell W. Barr, M.D., 507/373-1441	MN Surgical Society David Culligan, M.D., (612) 227-7564
MN Physiatrie Society Herbert Schoening, M.D., (612) 338-2229	MN Thoracic Society F. L. Rasp, M.D., 612/333-2156
MN Society of Plastic Surgeons William Carter, M.D., 612/925-1765	MN Urological Society Thomas Love, M.D., 612/224-7543
	Robert Christensen, M.D., Chairman, Interspecialty Council 612/445-1305

Echoes from Our Past

“No damage to the permanent way”

JACK D. KEY, M.A., M.S.*

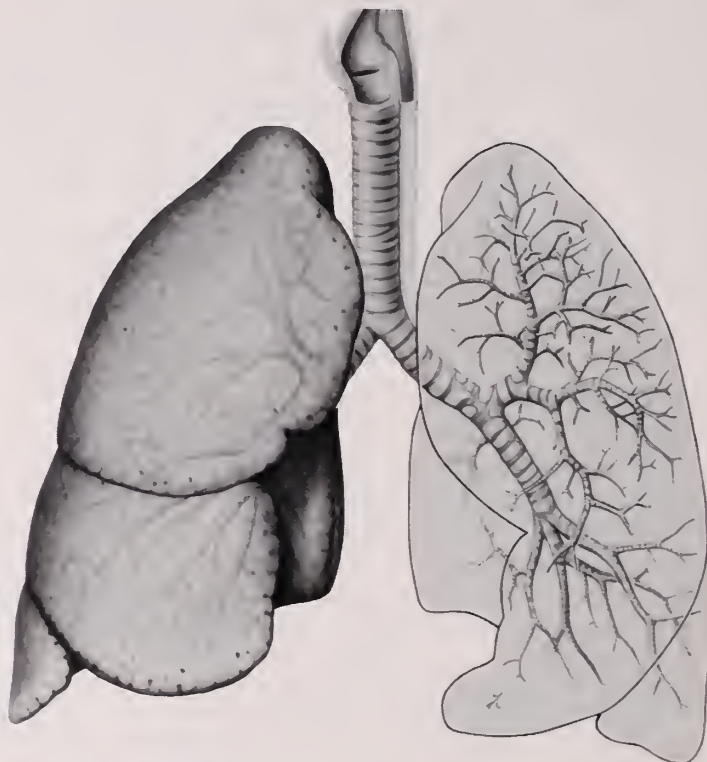
From India, a Baby-on-the-track case, which puts Osler's 1886 experience “in the shade” was reported in the *British Medical Journal* 1:1090, 1933, under the title “Birth at 20 m.p.h.”†

“C.R.H.” writes from India: A short time ago, while on an inspection tour, there came to my notice a birth, with medical factors not uncommon, but with related circumstances sufficiently unique that I imagine they will bear record. The third-class compartment of the Indian train — “females” utilize such, not women or ladies — duly caters for the squatting posture, commonly adopted for defaecation in India. So we find a small closet, with two footstands and a hole in the floor, which in the case in question was directly over one of the rails. A female, full of belly, entered such a closet in Narayanpur station; the train moved off, and at a time when it was judged the train was travelling at some 20 m.p.h., a yell was heard to emanate from the lavatory. This was forcibly entered by other travellers, who found the female lying in a mess of blood and minus her abdominal protuberance. Labour had been precipitate, but there was no sign of the child. The woman was removed from the train at the next station. Meanwhile the permanent way inspector and his staff had discovered a newborn child on the line, without as much as a bruise, and this despite the fact that the child must have fallen on to the rail some foot and a half in front of one of the wheels and then bounced on to the metal. The cord had been cut and ligatured (!) by the wheel of the carriage. Mother and child were reunited in Narayanpur Hospital, and both are very fit — so much so that the mother ran away the same night, carrying the child in her arms. A touch of humour was added to the case by the permanent way inspector, who concluded his report in the approved official manner: “No damage to the permanent way.”

*Librarian, Mayo Clinic, Rochester, Minnesota.

†By permission.

Consider the causative organisms...



Cecilor® cefactor 250-mg Pulvules® t.i.d.

**offers effectiveness against
the major causes of bacterial bronchitis**

H. influenzae*, *H. influenzae*, *S. pneumoniae*, *S. pyogenes
(ampicillin-susceptible) (ampicillin-resistant)

Brief Summary Consult the package literature for prescribing information

Indications and Usage. Cecilor® (cefactor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:

Lower respiratory infections including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci).

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Cecilor.

Contraindication. Cecilor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings. IN PENICILLIN SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS TO BOTH DRUG CLASSES.

Antibiotics, including Cecilor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, manage-

ment should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation.

When the colitis does not improve after the drug has been discontinued or when it is severe, oral vancomycin is the drug of choice for antibiotic associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions: General Precautions. If an allergic reaction to Cecilor® (cefactor, Lilly) occurs, the drug should be discontinued and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Cecilor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics in hematologic studies or in transfusion cross-matching procedures; when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Cecilor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended. As a result of administration of Cecilor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinistix® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B.—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum

human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cecilor® (cefactor, Lilly). There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers.—Small amounts of Cecilor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Cecilor is administered to a nursing woman.

Usage in Children.—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions. Adverse effects considered related to therapy with Cecilor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthritis, and frequently fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cecilor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have

occurred in patients with a history of penicillin allergy. Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain.—Transitory abnormal clinical laboratory test results have been reported. Although of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic.—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic.—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal.—Slight elevations in BUN or serum creatinine (1 in 500) or abnormal urinalysis (less than 1 in 200).

Note. Cecilor® (cefactor, Lilly) is contraindicated in patients with known allergy to the cephalosporins and should be cautiously administered to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Lilly

Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46268. Eli Lilly Industries, Inc., Carolina, Puerto Rico 00630.

403441

Motrin reduces inflammation, pain ...and price

New low price...major savings

The dramatic reduction in the price of *Motrin* Tablets means substantial savings from now on for your patients and for patients all across the country for whom *Motrin* Tablets are prescribed.

Motrin is priced lower than Clinoril, Feldene, or Naprosyn.

The price of *Motrin* Tablets to pharmacies has been reduced as much as 35%. Patients taking the average dosage should now pay less for therapy with *Motrin* Tablets than for almost any other nonsteroidal anti-inflammatory drug you prescribe...less, for example, than for Clinoril, Feldene, or Naprosyn. And, of course, all strengths of *Motrin* Tablets continue to be available by prescription only.

Please turn the page for a brief summary of prescribing information.

Motrin[®] 400 & 600 mg TABLETS
ibuprofen

Good medicine...good value

Motrin® Tablets (ibuprofen)

Contraindications: Anaphylactoid reactions have occurred in individuals hypersensitive to Motrin Tablets or with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to aspirin, iodides, or other nonsteroidal anti-inflammatory agents

Warnings: Peptic ulceration and GI bleeding, sometimes severe, have been reported. Ulceration, perforation and bleeding may end fatally. An association has not been established. Use Motrin Tablets under close supervision in patients with a history of upper gastrointestinal tract disease, after consulting ADVERSE REACTIONS. In patients with active peptic ulcer and active rheumatoid arthritis, try nonulcerogenic drugs, such as gold. If Motrin Tablets are used, observe the patient closely for signs of ulcer perforation or GI bleeding.

Chronic studies in rats and monkeys have shown mild renal toxicity with papillary edema and necrosis. Renal papillary necrosis has rarely been shown in humans treated with Motrin Tablets.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If these develop, discontinue Motrin Tablets and the patient should have an ophthalmologic examination, including central visual fields and color vision testing.

Fluid retention and edema have been associated with Motrin Tablets, use with caution in patients with a history of cardiac decompensation or hypertension. In patients with renal impairment, reduced dosage may be necessary. Prospective studies of Motrin Tablets safety in patients with chronic renal failure have not been done.

Motrin Tablets can inhibit platelet aggregation and prolong bleeding time. Use with caution in persons with intrinsic coagulation defects and on anticoagulant therapy.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, skin rash, weight gain, or edema.

Patients on prolonged corticosteroid therapy should have therapy tapered slowly when Motrin Tablets are added.

The antipyretic, anti-inflammatory activity of Motrin Tablets may mask inflammation and fever.

As with other nonsteroidal anti-inflammatory drugs, borderline elevations of liver tests may occur in up to 15% of patients. These abnormalities may progress, may remain essentially unchanged, or may be transient with continued therapy. Meaningful elevations of SGPT or SGOT (AST) occurred in controlled clinical trials in less than 1% of patients. Severe hepatic reactions, including jaundice and cases of fatal hepatitis, have been reported with ibuprofen as with other nonsteroidal anti-inflammatory drugs. If liver disease develops or if systemic manifestations occur (e.g. eosinophilia, rash, etc.), Motrin should be discontinued.

Drug interactions. Aspirin, used concomitantly may decrease Motrin blood levels.

Coumarin, bleeding has been reported in patients taking Motrin and coumarin.

Pregnancy and nursing mothers. Motrin should not be taken during pregnancy or by nursing mothers.

Adverse Reactions: The most frequent type of adverse reaction occurring with Motrin is gastrointestinal of which one or more occurred in 4% to 16% of the patients.

Incidence Greater than 1% (but less than 3%)—Probable Causal Relationship

Gastrointestinal: Nausea*, epigastric pain*, heartburn*, diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence). **Central Nervous System:** Dizziness*, headache, nervousness. **Dermatologic:** Rash* (including maculopapular type), pruritus. **Special Senses:** Tinnitus. **Metabolic/Endocrine:** Decreased appetite. **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation; see PRECAUTIONS).

Incidence less than 1%—Probable Causal Relationship**

Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests. **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma. **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia. **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS). **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit. **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations. **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasm (see CONTRAINDICATIONS). **Renal:** Acute renal failure in patients with pre-existing significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria. **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

Incidence less than 1%—Causal Relationship Unknown**

Gastrointestinal: Pancreatitis. **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri. **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions. **Special Senses:** Conjunctivitis, diplopia, optic neuritis. **Hematologic:** Bleeding episodes (e.g. epistaxis, menorrhagia). **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction. **Cardiovascular:** Arrhythmias (sinus tachycardia, sinus bradycardia). **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schönlein vasculitis. **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with Motrin. (Those reactions occurring in less than 3% of the patients are unmarked.)

**Reactions are classified under "Probable Causal Relationship (PCR)" if there has been one positive rechallenge or if three or more cases occur which might be causally related. Reactions are classified under "Causal Relationship Unknown" if seven or more events have been reported but the criteria for PCR have not been met.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine so alkaline diuresis may be beneficial.

Dosage and Administration: Rheumatoid arthritis and osteoarthritis. Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Do not exceed 2400 mg per day. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary.

Caution: Federal law prohibits dispensing without prescription.

MED B-7 S

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Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location: Contact person.

October 1984

-12 Professionals in Residence; Hazelden Training & Professional Education Dept.; Center City, MN; CONTACT: Hazelden Training & Education Box 11, Center City, MN 55012; 612/257-4010

1-12 Clinical Nutrition for Practicing Physicians; University of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

1-12 Vascular Disease Symposium — A practical update on newer aspects of arterial, venous and cerebral vascular disease; Methodist Hospital; Bloomington Marriott; CONTACT: Jan Stalpes, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5135.

2-12 6th Annual Adolescent Medicine & Health Care Conference: Adolescent Sexuality; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

2-13 Osteoporosis: Diagnosis Prevention Management; Melrose Institute; St. Joseph's Hospital, Scheffer Center; CONTACT: Carol Klitzke, Conference Coordinator, 612/646-2252.

2-14 Maxillofacial Trauma; office of CME, U of MN Medical School; Minneapolis; CONTACT: Bart Galle, Ph.D., Interim Director, CME U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3 Current Trends in Ophthalmology — 8th Annual; Mount Sinai Hospital; Hotel Sofitel, Bloomington; CONTACT: Nancy Pasell, Mount Sinai Hospital, 2215 Park Avenue, Mpls., MN 55404; 612/871-3700, Ext. 117.

3 Topics in Clinical Psychiatry; Minnesota Psychiatric Society & Mayo Clinic, Dept. of Psychiatry; Rochester; CONTACT: Norman P. Anson, M.D., 200 First St. SW, Rochester, MN 55905, 507/284-4155.

5-19 Practice Management Program: Marketing Strategies; Minnesota Medical Association; Grand Rapids, Detroit Lakes, Mankato, Marshall, St. Paul; CONTACT: Eugenia Kassir, 2221 University Avenue E, Suite 400, Minneapolis, MN 55414; 612/378-1875.

7-19 10th Annual Meeting; Minnesota Perinatal Organization, Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, 420 Delaware St., Mpls., MN 55455, 612/373-5718.

17-20 Principles of Colon and Rectal Surgery; CME, Univ. of MN Medical School; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware Street, SE, Mpls., MN 55455; 612/373-8012.

18-20 The 17th Annual Orthopaedic & Trauma Seminar; Hennepin County Medical Center, Pillsbury Auditorium, 701 Park Avenue So., Mpls., MN; CONTACT: Ramon B. Gustilo, M.D., 701 Park Ave. So. 813, Minneapolis, MN 55415.

20 "Troublesome Topics in Inflammatory Lung Disease, Limb Salvage, Acute Myocardial Infarction, and Rhythm Disturbances" THORACIC AND CARDIOVASCULAR SURGERY — 1984. Hyatt Regency Hotel on Nicollet Mall, Minneapolis, Mn. CONTACT: Wendy K. Johnson, 2545 Chicago Avenue Suite 611, Minneapolis, Minnesota 55404, (612) 871-4771.

24-26 Annual Autumn Seminar in Obstetrics & Gynecology; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455; 612/373-8012.

25-27 Emergency Medicine for Primary Care Physicians; Univ. of MN Medical School & St. Paul-Ramsey Medical School; CONTACT: Ruth K. McIntyre, Assoc. Dir. CME, St. Paul-Ramsey Medical Center; 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

26-27 Advanced Trauma Life Support Courses; American College of Surgeons; St. Paul, MN. CONTACT: Kari Ebert, 612/221-3991.

26-27 Clinical Cardiology Conference — and the Third Annual Jesse E. Edwards, M.D. Lectureship; United Hospitals of St. Paul & American Heart Association; Landmark Center; CONTACT: Med. Staff Office, United Hospitals, 612/298-8558.

27-28 Update in Cardiology; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

29-31 Clinical Reviews; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

31 Infections in the Elderly; Hennepin County Medical Center; Minneapolis, MN 55415; CONTACT: R.B. Breitenbucher, M.D., 701 Park Ave. So., Mpls., MN 55415; 612/347-2323.

November, 1984

2 Neurology Today — 1984; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

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November (continued)

2 Minnesota Surgical Society Meeting; Minnesota Surgical Society; Landmark Center; CONTACT: James W. LaFave, M.D. 330 Lowry Medical Arts Bldg., St. Paul, MN 55102, 612/227-6351.

2-3 Primary Care of the Child with Developmental Disabilities; University of MN & Gillette Children's Hospital; St. Paul, MN; CONTACT: Ruth K. McIntyre, Assoc. Dir., CME, Gillette Children's Hospital, 640 Jackson Street, St. Paul, MN 55101, 612/221-3980.

7 Pediatric Neurology/Neurosurgery; Continuing Medical Education, Univ. of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN, 612/373-8012.

9 E. T. Bell Institute of Pathology, Department of Laboratory medicine and Pathology, University of Minnesota will present, Annual Fall Symposium, "Current Concepts in Gastrointestinal Pathology," Mayo Memorial Auditorium, University of Minnesota, Minneapolis. CONTACT: CME, University of Minnesota, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455. (612) 373-8012.

10 Annual Medical Staff Meeting & Research Conference; St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth McIntyre, 612/221-3980.

10 Fall Seminar — Minnesota Society of Clinical Pathologists; MN Society of Clinical Pathologists; Registry Hotel; CONTACT: Linda Lacher, 2221 University Avenue, SE — Suite 400, Mpls., MN 55414, 612/378-1875.

11 Dermatology for the Primary Care Physician; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

11 ENT for Primary Care Physicians; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

12-14 Clinical Review; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

15-17 Clinical Strategies in Primary Care Medicine; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

16-17 5th Annual Seminar for CME Directors; Minnesota Medical Association; Riverwood Conference Center, Monticello, MN; CONTACT: Eugenia Kassir, 2221 University Ave. SE — Suite 400, Mpls., MN 55415, 612/378-1875.

16-17 Regional Meeting of the American College of Physicians in association with the MN Society of Internal Medicine & the American Society of Internal Medicine; American College of Physicians, MN Chapter; Hyatt-Regency Hotel; CONTACT: Alvin Schultz, M.D., Hennepin County Medical Center, Minneapolis, MN 55415, 612/347-2700.

26-27 Basic Life Support Course; Methodist Hospital; St. Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189.

26-28 Advanced Cardiac Life Support Course; North Memorial Medical Center; Minneapolis, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale No., Robbinsdale, MN 55422, 612/520-5535.

30 Seventeenth Annual Symposium on Obstetrics & Gynecology; North Memorial Medical Center; Minneapolis, MN; CONTACT: Eric Gilster, M.D., 3210 Lowry Ave. No., Mpls., MN 55422, 612/588-4625.

December 1984

5-8 Coronary Heart Disease: A Comprehensive Review of Principles and Practice; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

4-8 Clinical Gastroenterology, 1985; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

4-9 Northwestern Med. Association-40th Annual Meeting; CME, Univ. of MN Medical School; Sun Valley, Idaho; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

15 Burn Care Update; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-22 Current Problems in Cardiovascular Diseases; Mayo Clinic/Mayo Foundation; Walt Disney World, Hotel Royal Plaza, Lake Buena Vista, FL; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

22-23 Pediatric Update for Primary Care Physicians; Univ. of MN Medical School and St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Minnesota Physicians who have access to microcomputers with MODEMS are encouraged to make use of the Minnesota Medical Conference Tree (MMCT). This is a free service operated by the Minnesota Medical Computing Consortium with a hardware grant from 3-M. The BAUD rate is 300, full duplex. Physicians may call the Minnesota Medical Conference Tree at 612-434-6315, there is no charge for the use of this service, which is menu driven and self-explanatory.

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

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FAMILY PHYSICIAN wanted, board certified or eligible, to join two young family physicians in a growing family practice group. New facility. Northfield is a small attractive college town (St. Olaf and Carleton) and is less than one hour from the Twin Cities and Rochester. Contact: Kenneth Sansome, M.D., or David Larson, M.D., Family Physicians of Northfield, 505 W. Woodley, Northfield, MN 55057; (507) 663-1261.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Currently recruiting for Board Eligible or Board Certified Internist, preferably with subspecialty training and also a Board Eligible or Board Certified Ophthalmologist. Contact Administrator at (218) 751-1280 Bemidji, Minnesota.

OPPORTUNITY FOR qualified physicians at the Albert Lea Clinic, P. A., in Albert Lea, Minnesota. The clinic is a seventeen man multi-specialty group in primary and secondary care fields. The financial rewards are exceptional and practice challenges very attractive. There is a negotiated salary at top level for the first year. Senior physician participation begins at the end of the first year with a incentive income distribution plan plus expanded fringe benefits. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. These are choice practices in a delightful place to live. We are currently looking for physicians in Family Practice, in Otolaryngology, one OB-GYN. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

OB-GYN SHARE Health Care Associates, P.A., a physician owned and managed prepaid multispecialty group practice in Minneapolis-St. Paul is now seeking BE/BC Obstetrician Gynecologists for immediate openings. Salary and benefits are quite competitive. If interested, please send C.V. to: James Mueller, M.D., SHARE Health Care Associates, P.A., 1020 Bandana Boulevard West, St. Paul, Minnesota 55108.

WANTED: OB-GYN, family practitioner and internal medicine to join multi-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent. Many fringe benefits included. Write MINNESOTA MEDICINE (742) 2221 University Avenue, S.E., Suite 400, Minneapolis, Minnesota 55414.

GENERAL SURGEON — board certified or board eligible. To join eight member family practice medical center. Have full time radiologist. Major specialties consult on regular basis. Located at International Falls in northern Minnesota. Near Voyageurs National Park. Year around outdoor recreation abounds. Served by major airline. Population twenty thousand. Send curriculum vitae to Dr. James R. Schuft, Falls Medical Center, Shorewood Drive, International Falls, Minnesota, 56649.

BUSY FAMILY PRACTICE needs Associate, with early partnership considered. Well equipped 15 room Clinic on main street. Cannon Falls offers a 25 bed hospital (district approved bond issue for one million dollar expansion to start in April), 88 bed nursing home. One other clinic in town. We have a large drawing area. Cannon Falls offers excellent recreational facilities, and location is on Cannon River between the Twin Cities and Rochester on Highway 52. Contact Lloyd H. Klefstad, M.D., Box 98, Cannon Falls, Minn. 55009. Telephone 507-263-3545, or 263-4258.

PRIMARY CARE physician needed to provide services on a part-time basis at the Minnesota Correctional Facility for women at Shakopee. Contact Howard Johnson, (612) 296-2157.

OB/GYN BOARD CERTIFIED or Board Eligible to join progressive 12 physician multi-specialty group practice. Advantages of rural setting with metropolitan practice style. 25 miles from Minneapolis. Offers opportunity to develop OB section for progressive clinic with large geographical referral area. New fully equipped practice facilities are adjacent to a modern 110 bed hospital. Guaranteed salary and benefits schedule with buy-in option at two years. Send CV to: Dr. Jon D. Wempner, Chief of Staff, Lakeview Clinic, Ltd., 424 State Hwy 5 West, Waconia, Minnesota, 55387 or telephone (612) 442-4461.

PACIFIC ISLAND PARADISE (ALMOST) Experienced general practitioner needed for Central Pacific military/construction base as one of two physicians. Emergency medicine desirable. Salary negotiable. If eligible, total federal tax exemption. Excellent food and housing free. Physically active physician for duty and to enjoy recreational activities in constant sunshine. Contact: Tony Brum, Holmes and Narver, Inc., P.O. Box 29939, Honolulu, Hawaii 96820.

OWN YOUR PRIVATE ISLAND — Get There In Two Hours — Would you believe that you could own your own Fantasy Island with authentic log cabin just a couple of hours from Mpls.? Would you believe it has a huge fieldstone fireplace and beamed ceilings? Or, that you can buy it for under \$100,000? All boats, furniture and equipment included. First Minneapolis Realty, David Bueide, 333-2628.

WANT TO BUY A PRACTICE: Family Practice, SOLO or share/group; midwest. Prefer Twin Cities or radius 100 miles, but will consider all other places. WILLING TO WAIT FOR UP TO ONE YEAR. Thinking of retirement or relocation? I am an MD/diplomate ABFP. Write MINNESOTA MEDICINE (744), 2221 University Avenue SE #400, Minneapolis, Minnesota 55414.

LOCUM TENANS Work Wanted: Doctor don't you need time off? A competent M.D. (F.P) to care for patients. Available 1, 2, 4, 6 wks. Excellent references. Write Minnesota Medicine (745) 2221 University Ave. SE Minneapolis, MN 55414.

BARTRON CLINIC, PC seeks Internal Medicine practitioner for group practice. Salary negotiable. Watertown, SD, northeastern location offers two modern hospitals, total 150 beds, 16,000 population, 100,000 trade area, multi specialty clinic with 8 physicians specializing in surgery, OB/Gyn, pediatrics, internal medicine, family practice. Inquiries to Gary Larson, 320 7th Avenue SE, Watertown SD 57201. 605-886-8471.

FAMILY PRACTITIONER — Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

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FAMILY PRACTICE ORIENTED multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

SURGEON'S OFFICE AVAILABLE — 870 square feet, 4th floor Minneapolis Medical Arts suite immediately available for lease at a very favorable rate. All furniture and equipment available for purchase. Phone: 874-5274

(Continued on page 604)

Classified Advertisements

(Continued from page 525)

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

ACADEMICALLY ORIENTED physician (board certified internist or family practice physician) who has outpatient and inpatient care skills and who can teach these skills to medical students and residents. Applicant should be qualified for a faculty appointment to the University of South Dakota School of Medicine. There is defined time which can be used to further teaching and research goals. Area offers a clean climate, good school system, well built housing and excellent recreational/cultural facilities. Equal Opportunity Employer; contact Charles Beauchamp, M.D., Ph.D., Chief of Ambulatory Medicine, P.O. Box 5046, Sioux Falls SD 57117, (605) 336-3230, Ext. 540.

ALBERT LEA MEDICAL and Surgical Center Family Practice openings. Multi-specialty Clinic with four Branch Offices needs at least two Family Practitioners and one Medical Internist immediately. Southern Minnesota location. Excellent hospital facilities. Good schools, cultural, industrial, and agricultural climate. Guaranteed salary first year, full participation thereafter. Excellent benefits. Full consultation services. Escape city mayhem. Enjoy easy, country living. Contact Mr. Charles Lowery at (507) 373-1441, at 210 N. St. Mary St., Albert Lea, MN 56007; or Dr. Charles Wilcox, same phone and address.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

ORTHOPAEDIC SURGEON: Cambridge, Minnesota: 45 minutes from downtown Twin Cities: beautiful recreational area: good schools: new hospital: excellent opportunity for board certified orthopaedic surgeon to join 17-man multispecialty group, including one existing orthopaedic surgeon: 1st year salary +; 2nd year partnership available: please contact Administrator Al Nelson at 612/689-1411, Minneapolis 612/434-6622, or Home Phone 612/396-2504."

EMERGENCY ROOM, URGENT CARE PHYSICIANS. Immediate opportunities with the largest Northwest emergency medical group. Choose your own location, schedule, earnings potential. Eastern, Western Washington, Oregon. Contact: L. Poschman, Physician Services, Northwest Emergency Physicians, 11808 Northup Way, Bellevue, WA 98005, (206) 828-6799.

1985 CME CRUISE/CONFERENCES on selected medical topics — Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. 7-14 days year-round. Approved for 20-24 CME Cat. 1 credits (AMA/PRA) & AAFP prescribed credit. Distinguished professors. Fly roundtrip free on Caribbean, Mexican, & Alaskan cruises. Excellent group fares on finest ships. Registration limited. Pre-scheduled in compliance with present IRS requirements. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

PSYCHIATRIST to join progressive multi-specialty group of 50 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: Harris P. Hinderaker, M.D., 101 Willmar Avenue, Willmar, MN 56201.

FORTY-THREE PHYSICIAN, multi-specialty clinic in Minneapolis area desires an additional orthopedic surgeon for expanding practice. Excellent salary and fringe benefits. Must be board certified or board eligible. **CONTACT:** ALLEN W. DELZELL M.D., 6341 University Ave. N.E., Fridley, MN 55432, 612-571-0457.

GENERAL/FAMILY PRACTICE. Southern California. CIGNA Healthplans of California has over 28 facilities in Los Angeles and Orange Counties and more than 350,000 members. Our 370 full-time physicians enjoy a personal patient population and continuity of care. Significant growth has created opportunities for experienced specialists and General and Family Practitioners to join our professional team and share in our excellent compensation and benefits package. For more information send curriculum vitae to Director/Physician Recruitment: CIGNA Healthplans of California, 700 N. Brand Blvd., Suite 500, Glendale, CA 91203.

Classified Advertisements

INTERNAL MEDICINE — Expanding needs: Cambridge, Minnesota: 45 minutes from downtown Twin Cities: beautiful recreational area: good schools: new hospital: excellent opportunity for board certified internist to join 17-man multi-specialty group, including two existing internists: 1st year salary+: 2nd year partnership available: Contact Administrator Al Nelson at 612/689-1411, or home phone 612/396-2504.

ORTHOPAEDIC SURGEON — Expanding needs: Cambridge, Minnesota: 45 minutes from downtown Twin Cities: beautiful recreational area: good schools: new hospital: excellent opportunity for board certified orthopaedic surgeon to join 17-man multi-specialty group, including one existing orthopaedic surgeon: 1st year salary+: 2nd year partnership available: Please contact Administrator Al Nelson at 612/689-1411: Minneapolis 612/434-6622; or home phone 612/396-2504.

FAMILY PRACTICE — Expanding needs: position open for two christian family practice residency trained to join multi-specialty practice presently 17 physicians: Cambridge, Minnesota located one hour from downtown Minneapolis/St. Paul: Contact Administrator Al Nelson at 612/689-1411, or home phone 612/396-2504.

OB/GYN — Expanding needs: position open in Cambridge, Minnesota for Christian OB/GYN, board eligible, board certified, to join a multispecialty practice with one existing OB/GYN physician. Excellent opportunity to rapidly develop a rewarding practice within a pleasant urban/rural setting just one hour from downtown Minneapolis/St. Paul. Brand new 85-bed full service and acute care hospital. Contact Administrator Al Nelson at 612/689-1411, or home phone 612/396-2504.

ST. LOUIS PARK MEDICAL OFFICE suite available for time-sharing or sublet. For Sale: Burdick E100 Electrocardiograph 1982; Spirometer — Vitalor; AMES — BMI — Blood Analyzer; Picker 100 milliamp x-ray machine — new head; Metal X-ray files; assorted stainless steel surgical instruments, metal trays, cautery, etc. (612) 929-2666 or (612) 935-5792 after 6 pm.

FOR LEASE: Approx. 1000 sq. ft. clinic space near Maplewood Mall — 3 exam rooms, own waiting room, own entrance, X-ray facilities. If interested, call 221-9726.

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(continued on page 606)

(Continued from page 605)

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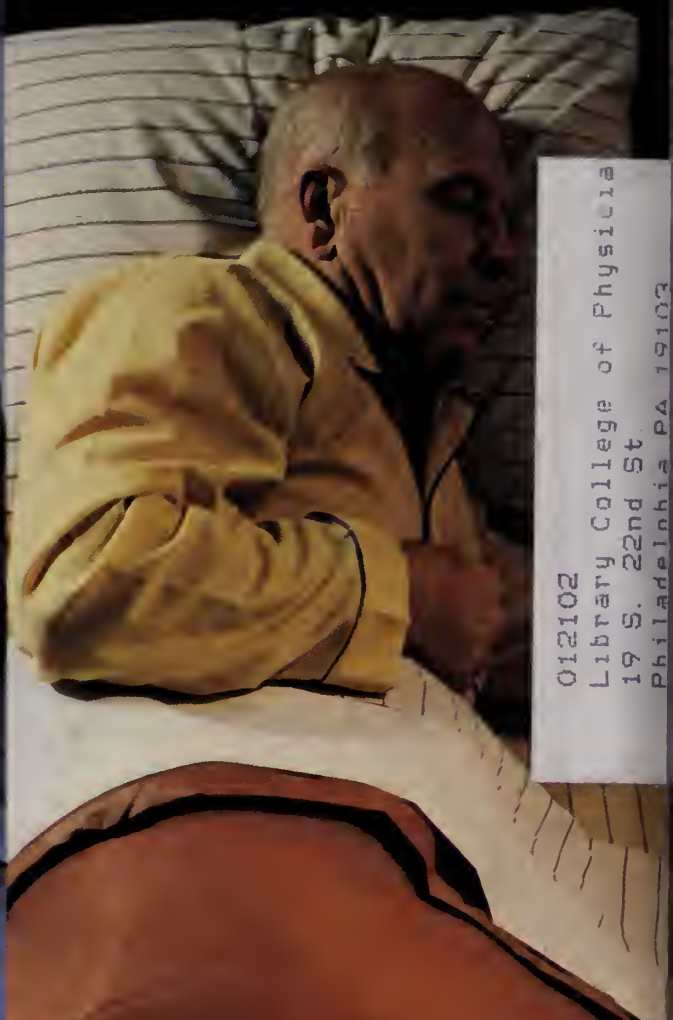
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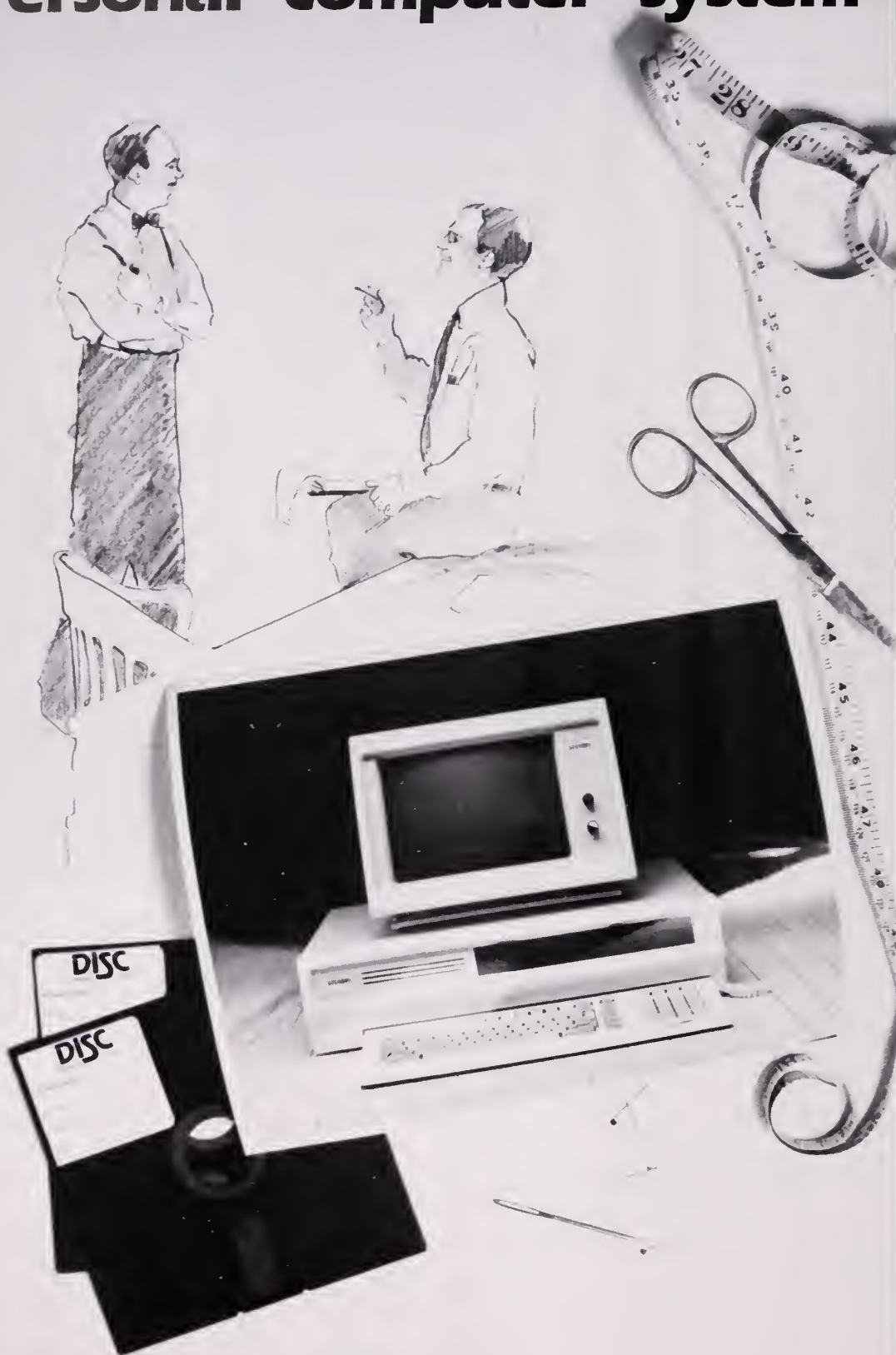
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4. How many newly identified diseases do we miss, such as AIDS, Legionnaire's and slow viruses?

George Balanchine, choreographer for the New York City Ballet, died April 30, 1983, of a bizarre degenerative neurologic disorder. Doctors were baffled as this athletic 79-year-old deteriorated. Post-

mortem examination has since revealed he suffered from Creutzfeldt-Jakob Disease when a Kuru plaque was seen on his brain section, one sign of slow virus disease.

A retrospective study of 100 consecutive cases of autopsy proving acute myocardial infarctions disclosed only a 50% correct ante mortem diagnosis in a teaching hospital.²

In my request for autopsies from family members, I simply say, "we learn a great deal from postmortem examinations. This can lead to a better care of others. It might also disclose a condition that can have importance to the living members of your family. It will not interfere with the showing of the remains." For me, this works more often than not.

George D. Lundberg, M.D., editor of JAMA, said, "One can learn much about how society lives by studying how it dies."

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

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Robert Rosenthal, M.D.

1896-1984

ROBERT O. FISCH, M.D.*

FOR THOSE PRIVILEGED to have known him, there is no need for words; for those who did not, no words are adequate to describe Dr. Robert Rosenthal. He was the rare combination of excellent physician, discerning collector, archeologist, historian, scholar and above all, a loving, charming human being.

Dr. Robert Rosenthal was born in 1896 in Austria. In his youth, he wanted to be an artist. However, after the experience of World War I, he entered medical school at Vienna, graduating in 1922. He then did postgraduate work at Vienna and at Berlin. In 1923 Dr. Tobias L. Birnberg, who was visiting Vienna, invited the young Dr. Rosenthal to come to St. Paul where Dr. Walter Ramsey was just opening the first Children's Hospital. Dr. Ramsey invited Dr. Rosenthal to join him at Children's and for many years they formed a team on the hospital staff. For more than five years Dr. Rosenthal practiced with Dr. Birnberg and then began to practice on his own, continuing in practice until 1982, when he retired at the age of 86.

Dr. Rosenthal's affiliation with the Pediatric Department at the University of Minnesota started in 1926 as an Instructor, and later as a Clinical Assistant

Professor. He became Emeritus in 1964.

Dr. Rosenthal was a great advocate and active supporter of the children of St. Paul. He was a leader in many fundraising activities to promote child welfare and health facilities. A member of most hospital staffs in St. Paul, Dr. Rosenthal was twice Chief of Staff at the St. Paul Children's Hospital. He became a certified pediatrician and served voluntarily as a pediatrician for the Children's Service of St. Paul.

But beyond Dr. Rosenthal's dedication to his patients, his deep desire for further knowledge, and his efforts to convey knowledge of the past to the present, was his humane and ever generous personality.

During their forty-eight years of marriage Mrs. Judy Rosenthal frequently accompanied her husband on house calls. Leaving St. Paul Children's Hospital late one evening, he told his wife of his despair that a little boy had been uninterested in food for days and was dying. At that time, IV solutions and hyperalimentation were not known, and the child's prognosis without obtaining food was grave. At 11:00 p.m., Mrs. Rosenthal started to make cookies of various shapes (toys, animals, etc.), and at 1:00 a.m. Dr.

*Professor of Pediatrics, University of Minnesota, Minneapolis.

Rosenthal brought the cookies to the child. The little boy opened his eyes, smiled, reached for the cookies, and started to eat.

Dr. Robert Rosenthal never had any children of his own. He loved children dearly and wanted them to be healthy and happy. During his active years of practice he took care of over 12,000 children. In a number of families he served as pediatrician through several generations. As an adviser, friend, and example, he influenced and helped so many, that thousands remain his children.

Dr. Rosenthal said frequently that he had a congenital disease; he was born to be a collector. His passion to collect did not have a monetary or materialistic motivation, but grew out of an eagerness to obtain new information and knowledge. His historically valuable collection of infant feeding bottles, dating from Pompey through the centuries, was given to the Owen H. Wagensteen Historical Library of Biology and Medicine at the University of Minnesota (Figure).

However, Dr. Rosenthal was most enthusiastic about medical history. He translated from Latin, German, and Hebrew, corresponded with leading medical historians, and wrote numerous articles about the medical history of Minnesota. His valuable collection of historically important medical books was given to the Wagensteen Historical Library and the Ramsey County Medical Society. His collections have been shared with others after his death as his knowledge was shared before his death.

His greatest talent was giving. After sharing an occasion with him, everyone came away richer, having learned something new. He was knowledgeable about trees, drugs, customs, legends, stories, histories, and multitudinous subjects. He had an end-



A sample of Dr. Rosenthal's collection of nursing bottles and pediatric antiquities includes a Roman earthen jar, metal flasks from the late 18th and early 19th centuries, glass nursing bottles from the 19th and early 20th centuries, and antique pap boats and spoons. The collection is now owned by the Owen H. Wagensteen Historical Library of Biology and Medicine, a division of the Bio-Medical Library at the University of Minnesota.

less fount of information which he loved to share with his friends. At one time, he said, "I would like someone to hold my hand and take me back to Vienna." No one did. But Dr. Robert Rosenthal took our hands and brought us to Shakespearian, Talmudic, Greek, Roman, Egyptian and Arabic medicine. He held our hands and flew with us on the magic carpet of his sparkling knowledge. We cherish his memory and who knows, possibly someone has taken his hands and led his curious spirit through the past, present, and future. After all, where he is now, no boundaries of time or place exist. We admire Dr. Rosenthal; we loved him; and we miss him.

Thank you, Dr. Rosenthal, for being with us and giving us the privilege of knowing you.

Cover Photograph Fall Elegance

The cover photograph was taken on the Gaspé Peninsula, Quebec, Canada in September, 1982. It was taken in the Forillon National Park by Dr. Donald A. Scholz of Rochester. A Nikon F camera with Kodachrome 64 film was used.

Dr. Scholz is a consultant at the Mayo Clinic in Internal Medicine. He was one of the winners of the best cover award in 1982 for the January 1981 "Cranberry Delight" cover. The November 1982 issue of MINNESOTA MEDICINE featured another cover taken by Dr. Scholz.

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Coumarin: bleeding has been reported in patients taking *Motrin* and coumarin.

Pregnancy and nursing mothers: *Motrin* should not be taken during pregnancy or by nursing mothers.

Adverse Reactions: The most frequent type of adverse reaction occurring with *Motrin* is gastrointestinal of which one or more occurred in 4% to 16% of the patients.

Incidence Greater than 1% (but less than 3%)—Probable Causal Relationship

Gastrointestinal: Nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence); **Central Nervous System:** Dizziness,* headache, nervousness; **Dermatologic:** Rash* (including maculopapular type), pruritus; **Special Senses:** Tinnitus; **Metabolic/Endocrine:** Decreased appetite; **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation, see **PRECAUTIONS**).

Incidence less than 1%—Probable Causal Relationship**

Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see **PRECAUTIONS**); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting; anaphylaxis, bronchospasm (see **CONTRAINDICATIONS**); **Renal:** Acute renal failure in patients with pre-existing significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

Incidence less than 1%—Causal Relationship Unknown**

Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g. epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmias (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis; **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with *Motrin*. (Those reactions occurring in less than 3% of the patients are unmarked)

**Reactions are classified under "Probable Causal Relationship (PCR)" if there has been one positive rechallenge or if three or more cases occur which might be causally related. Reactions are classified under "Causal Relationship Unknown" if seven or more events have been reported but the criteria for PCR have not been met.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine so alkaline diuresis may be beneficial.

Dosage and Administration: Rheumatoid arthritis and osteoarthritis: Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Do not exceed 2400 mg per day. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary.

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Cutaneous Cryosurgery

RANDALL K. ROENIGK, M.D.*

Cryosurgery is simple, quick, and effective treatment for skin diseases such as warts, actinic keratoses, seborrheic keratoses and others. Lesions can be removed with little or no scarring. The use of cryosurgery for the treatment of cancer is an alternative form of therapy for selected cases. The historical, scientific and clinical aspects of this time tested therapy are reviewed.

THE EFFECTS OF cold on the body have been studied since the days of Hippocrates. In AD 25, Celsus noted that exposure to extreme cold lead to severe injury or dry gangrene. In AD 70, Galen described a loss of sensation following injury from cold. The effect of cold has been a constant concern for the armed services; and it was during the Napoleonic wars that Napoleon's surgeon-general, Von Larrey, documented the affects of cold on his soldiers; erythema and blister formation were followed by gangrene after prolonged exposure. 115,000 casualties were attributed to cold injury in World War I.¹

Cryosurgery is defined as the controlled destruction of tissue by cold. More than one hundred years ago Dr. James Arnott² first used cryotherapy for the destruction of tumors at the Great Exhibition. The first use of cryotherapy in dermatology was by White in 1899³ who used liquified air devised by Charles Trippler for the treatment of various skin diseases. Pusey in 1907⁴ used carbon dioxide snow for the treatment of nevi and other skin lesions, and Giraudeau in 1925⁵ added acetone and sulfur to carbon dioxide to make a "slush" used to treat hemangiomas and acne. Finally, Herman Allington in 1950⁶ introduced liquid nitrogen for the treatment of skin disease. It is liquid nitrogen which most practitioners today are familiar. Since that time its use for treatment of pre-malignant and malignant disease of the skin has been well documented. Cryosurgical techniques have been developed in other fields as well, such as in gynecology for treatment of cervical lesions⁷, and ophthalmology for the treatment of cataracts or detached retinas.⁸ Oral surgeons have found cryosurgery useful both for treating lesions on a moist surface,^{9,10} or for tonsillectomy on patients with a bleeding diathesis.¹¹

With more than 100 years of experience the use of cryosurgery in the practice of medicine is well established. In recent years the limitations and expec-

tations for this procedure have been more clearly delineated. Some interesting research has revealed several mechanisms of action explaining the effectiveness of cryosurgery.

Cellular Response to Cryosurgery

Tissue freezes at a temperature of -0.6°C . The rate at which freezing takes place however is perhaps equally important as the temperature achieved.¹² As indicated in Figure 1, a more rapid rate of freezing

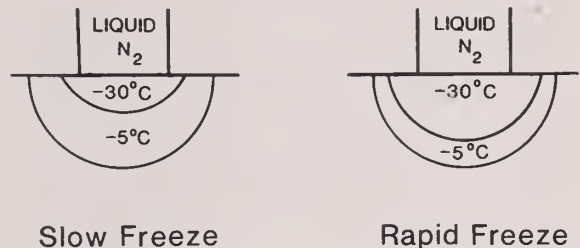


Fig. 1 — The variation of isotherms is partially dependent on cooling rate.

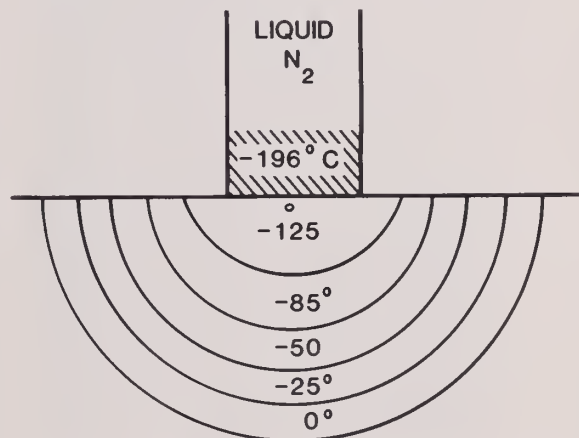


Fig. 2 — Using a liquid nitrogen probe note variations in isotherm temperatures in tissue.

*Department of Dermatology, University of Minnesota, Minneapolis, Minnesota.

results in a greater amount of tissue reaching a lower temperature as well as a difference in the size of ice crystals. Additionally, tissue most distant from the probe is understandably warmer than that close to the probe (Figure 2).¹³ When tissue is frozen slowly larger ice crystals form extracellularly; while rapid freezing results in smaller ice crystals forming both intracellularly and extracellularly.¹⁴

There are a number of theories to explain why freezing results in cell damage:^{15,16} (1) Damage to cells may simply be due to mechanical forces. This would be caused by cellular ice crystals interfering with normal cell function;^{17,18} (2) Disruption of cell membranes may lead to osmotic damage, such as dehydration of protoplasm or rapid electrolyte changes;^{19,20} (3) Cold temperature then may denature lipid-protein complexes;²¹ (4) Freezing may damage blood vessels and lead to cellular thermal shock and vascular stasis.^{22,23} Necrosis and vessel damage corresponds to the zone of freezing. The large blood vessels are resistant to cryogenic injury due to warmth of the flowing blood.

Some authors have suggested that autoantibody formation may augment damage caused by cryosurgery.²⁵⁻²⁷ Necrotic cells may become antigenic. Antibodies against these neoantigens react with remaining cells when cryosurgery is used to treat malignant tumors.^{25,26} Support for an immunologic mechanism was provided by Haxthausen who reported twelve patients treated with CO₂-snow for a superficial fungus infection with resolution of distant patches in three to six weeks.⁷ Immunologic reaction is an unlikely primary mode of action for cryosurgery, but suggests that other causes of cell death may mediate cold injury.

Clinical Concepts for Performing Cryosurgery

When treating benign skin lesions, remember that melanocytes are readily damaged by cryosurgery and this may result in post operative hypopigmentation. Fibroblasts are relatively cryoresistant; therefore, the dermis remains relatively intact. For most common lesions (ie. warts, keratoses) the duration of application of the cryogen (ie. liquid nitrogen) is the most important variable of cell necrosis. This is best measured as thaw time, which is estimated by noting the change in color from white to flesh tone (Figure 6). For benign lesions a thaw time of 20-30 seconds is recommended. A large lesion extending deeply may require longer or repeated treatments. Pressure increases the depth of freezing and ideally should not be applied when performing cryosurgery. Increased pressure will more likely cause cell damage of the

dermis. Increased pressure is not necessary when treating benign epidermal lesions and will more likely result in unwanted scar formation.

The rate of freezing is another variable of effective cryosurgery. A more rapid fall in temperature will result in greater tissue damage. A more rapid fall occurs after one constant prolonged application than after repeated short applications. As illustrated in Figure 3, there is an increased depth which tissue freezes with time; that is, the duration of a constant application of the cryogen is directly related to the depth of freeze obtained. In the clinical situation the duration of treatment may vary significantly. Some patients are more tolerant of the pain. Some anatomical locations may be more sensitive as well.

The rate of freezing also depends on the cryogen. Liquid nitrogen, most commonly used today, has a temperature of -195.8°C, while solid carbon dioxide has a temperature of -78.5°C. The maximum depth of freeze is about 1mm for solid CO₂. When using a cotton tip applicator the depth of freezing with liquid nitrogen is generally 1.5mm-2.0mm while a liquid nitrogen spray apparatus can freeze to about 0.5mm depth.

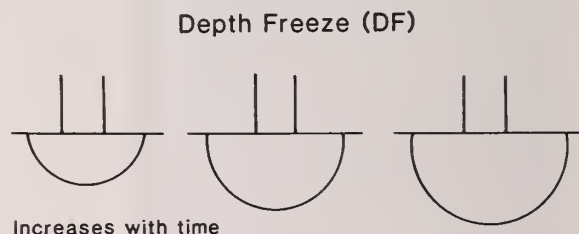


Fig. 3 — The depth freeze (DF) increases with duration of cryogen application.

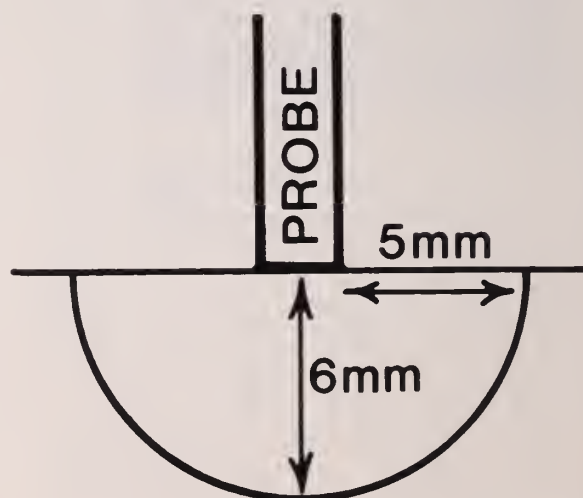
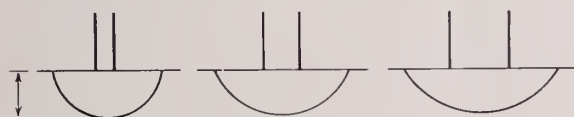


Fig 4 — Depth of freeze closely approximates lateral spread (Halo).

Understandably, the depth of freezing is important, especially when treating carcinomas with cryosurgery. The use of thermacouples is one way to determine depth of freeze. Thermacouples are an accurate form of measurement but may be cumbersome. However, the diameter of the lateral spread of freezing, or the white halo around cryoprobe closely approximates the depth of freeze (DF).⁸ As shown in Figure 4, the width of the halo approximately equals the distance of the probe to the 0° isotherm depth in the tissue. Lateral spread of freeze (LSF) also increases with width of the cryoprobe (Figure 5).^{29,30} Torre, et. al. mathematically related DF to LSF by the following formula: $DF = 1.3 \times LSF$. The validity of this relationship is questioned by Zacarian who showed experimentally in dogs that there was no consistent relationship between LSF and DF.³¹ It was felt that variations in the circulation of the tissue and the diverse histology of lesions caused this relationship to be unreliable.

Following cryosurgery the skin reacts with the triple response of Lewis; redness, wheal formation, and surrounding flare. The reaction rate may vary and is generally slower on thicker skin. Grimmett des-

Lateral Spread of Freeze (LSF)



Time constant — same depth

Fig. 5 — The lateral spread of freeze (LSF) is partially dependent on the diameter of the cryoprobe.

cribed the histology of the frozen skin.³² At 30 hours one sees subepidermal vesicles with upper dermal edema and basophilic degeneration. This is accompanied by a mild inflammatory infiltrate of polymorphonuclear cells and lymphocytes. Epidermal regeneration starts within 72 hours from surrounding epidermis and adnexae. At eight days the superficial epidermis is degenerated and overlies regenerated epidermis 2-3 cell layers thick. The dermis is less edematous and the infiltrate is decreased.

General Indications for Cryosurgery

The Table lists twenty-nine diseases for which cryosurgery has been used. This list is incomplete, but does demonstrate the versatility of this form of therapy. Cryosurgery is the treatment choice for most common warts (Figure 6), and has been very successful. Zacarian reported the treatment of 404 warts with a cure rate of 75% in one to two treatments.

TABLE 1

Some diseases for which cryosurgery has been used.

Acne ^{36,37,38,39}	Leishmaniasis ⁴⁷
Basal Cell Carcinoma ^{41,42,43}	Lentigo Maligna ⁴⁰
Bowen's Disease ⁴⁴	Leukoplakia ¹²
Discoid Lupus ¹²	Lichen Simplex Chronicus ¹²
Elastosis Perforans	Molluscum Contagiosum
Serpigenosa ⁴⁵	
Erysipeloid ⁵¹	Mucoid Cysts ⁴⁶
Erythroplasia of Queyrat ⁵⁰	Myxoid Cysts ⁴⁹
Folliculitis Keloidalis ⁶	Neurodermatitis ¹²
Granuloma Annulare ¹²	Nevus Araneus
Herpes Simplex ⁴⁸	Prurigo Nodularis ¹²
Hypertrophic Lichen Planus	Pyogenic Granuloma
Keloids ¹³	Senile Ectasia
Keratoacanthoma	Superficial Hemangiomas
Keratosis ¹²	Swimming Pool
	Granuloma ¹²
	Warts ^{33,35}



Fig. 6 — Liquid nitrogen on a cotton tip applicator for the treatment of warts.

Another 14% required 3 treatments while 11% required 4-6 treatments.³³ Some warts are recalcitrant to this therapy, but no therapy is universal.^{34,35}

Cryosurgery has also been used to treat cystic acne and related conditions such as rosacea, hidradenitis suppurativa, Gram negative folliculitis, and pyoderma faciale. Initially, Eller and Wolfe (1941) treated recalcitrant acne with a dry ice slush.³⁶ Later, Wright and Gross (1949) reported a series of 2,000 patients with cystic acne treated with solid dry ice.³⁷ Allington (1950) first used liquid nitrogen on acne cysts, superficial scars and folliculitis keloidalis.⁶ Torre (1970) and Graham (1971) used liquid nitrogen spray to produce peeling for the treatment of milia and acne.^{38,39} Although there are many other forms of acne therapy, antibiotic chemotherapy and topical therapy have long been the mainstay of treatment. Cryosurgery may be alternative adjunct therapy for severe acne. Comedonal acne generally fails to respond, but large papules, pustules or cysts are treated with freezing for two to five seconds (maximum of 15 seconds).

Cryosurgery may also be used for scar revision. Normal scarring is treated with repeat (3-5) applications for 10-20 seconds. Hypertrophic scarring and keloids may require 1.0 — 1.5 minutes of treatment.¹³ Cosmetic results are reported to be good. Many other skin diseases can be treated with cryosurgery (Table 6), demonstrating the broad spectrum of this physical modality.

Cancer Cryosurgery

Cryosurgery for the treatment of malignancy was originally described in the 1930s when low temperature saline solutions were used to treat metastatic carcinomas.⁵² Later, neurosurgeons used cryosurgery to treat Parkinson's disease by destroying the basal ganglia^{53,54} and for hypophysectomies.⁵⁵ The use of cryosurgery was adapted for the treatment of skin cancer in 1967^{41,56} and refinements have been reviewed by Torre⁵⁷ and Zacarian.⁵⁸ Cryosurgery, however, is not the primary choice of treatment for most common basal cell carcinomas and other skin cancers. Surgical excision, electrodesiccation and curettage or microscopically controlled surgery all have advantages over cryosurgery. Specifically, one can never be certain that all of the tumor has been destroyed when cryosurgery is used. The depth of freezing is rarely greater than 2cm prohibiting treatment of large tumors. In addition, the destruction of tissue precludes determination of tumor free margins.

However, there are patients for whom cryosurgery is indicated, and statistical studies have demonstrated

the efficacy of this technique. Patients who refuse cold steel surgery despite medical advice to the contrary are candidates. There are elderly patients who may be institutionalized in whom the risk of surgical complications, poor wound healing or anesthesia may outweigh the benefits of surgery. Additionally, patients with chronic radiation dermatitis for whom wound healing might be difficult, could be considered for cryosurgery. Finally, the rare patient who is allergic to the anesthetic would be a candidate for this form of therapy.

Graham recently reviewed her experience with cryosurgery for the treatment of 2,500 skin tumors over 15 years.⁴² The cumulative 5 year cure rate for new and recurrent tumors was 96%. This rate improved to 98% if only small nodular basal cell carcinomas are considered. Cure rates by anatomical location are best for the scalp (100%), lower extremity (100%), trunk (99.5%) and neck (98.8%). Cure rates were slightly lower on the nose (95.3%), eyelid (91%), nasolabial fold (93.2%) and ear (94.7%). Others have described good cure rates treating tumors of eye lids and nose with good cosmetic results.⁴³

There are a number of cryotherapy units available.⁵⁸ The cotton tip applicator soaked in liquid nitrogen, however, is still very popular and effective for most benign and pre-malignant lesions. More sophisticated cryotherapy units use liquid nitrogen as the cooling agent with applicator probes of differing sizes. The cryoprobe with liquid nitrogen may reach temperatures of -180°C , but other cryogenic agents like carbon dioxide (-78.5°C), nitrous oxide (-80°C), and halogenated hydrocarbons such as Freon (-22° to -40°C) are available.

Thermocouples for tissue temperature regulation is an important adjunct for cancer cryotherapy. They were first used by Brodthagen,⁵⁹ and later by Zacarian and Torre.⁶⁰⁻⁶³ Ideally a tissue temperature of -25°C to -50°C is reached in 30-90 seconds with thaw time of 2.5-three minutes. The advantage of precise determination of tissue temperature is important to insure a complete tumor necrosis. Depth of freeze can be monitored with the help of a jig (or brace) until the surgeon is experienced enough to judge the depth of freeze grossly. The use of thermocouples is essential for surgery of the eyelid, nasolabial fold and for deeper recurrent tumors.

Following cryosurgery, postoperative wound care is uncomplicated. The wound can be left open or covered with a loose dressing. Application of an antibiotic ointment is optional since infection is generally not a problem.¹² Yearly follow up exams will suffice

once healing is complete. Scarring is minimal.^{42,43}

Complications rarely occur. The chief problem is neuropathy.⁶⁵ Neuralgia usually subsides in two to three days, but permanent sensory loss and paralysis have been reported. Other complications include edema, hemorrhage or blister formation. Cryonecrosis following extensive freezing can result in a thick eschar forming in two to three weeks.

Summary

Cryosurgery is an established form of therapy for

many diseases of the skin. Its use in medicine has a firm foundation and will prosper for many generations. Its prime clinical application is the treatment of benign and pre-malignant skin disease simply and effectively as an office procedure. Cancer cryosurgery should be considered as an alternative for some patients but not be regarded as the treatment of choice for basal cell and squamous cell carcinoma.

Acknowledgment

I would like to thank Mark V. Dahl, M.D., for his help in preparation of this manuscript.

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Rheumatology Corner

Upper Gastrointestinal Manifestations of Rheumatic Diseases

ROBERT D. LEFF, M.D.*

UPPER GASTROINTESTINAL involvement is an uncommon but significant extra-articular manifestation of many rheumatic diseases. The symptoms and signs referable to the upper gastrointestinal tract are frequently not adequately evaluated when examining a patient with evidence of joint disease. The accompanying Table lists the rheumatic diseases most likely to present with various oral, esophageal, gastric, or duodenal lesions.

Sjögren's syndrome is a systemic disease characterized by lymphocytic tissue infiltration. The clinical features include keratoconjunctivitis sicca, xerostomia, and the presence of a connective tissue disease. The oral findings involve the subjective complaint of dry mouth and constant thirst, difficulty in chewing, swallowing and/or speaking. Objectively, there may be fissures on the lips, particularly at the corners, and dental caries are prevalent. Frequently, a wooden tongue depressor will stick to the mucosal surfaces and evidence of oral candidiasis is common.

Recurrent aphthous stomatitis is virtually a sine qua non of Behcet's disease. Other manifestations include evidence of perineal ulcers, uveitis, synovitis, and cutaneous vasculitis. The aphthous ulcers are usually the first manifestation. The lesions are indistinguishable from those of uncomplicated aphthous stomatitis, and they usually appear on the buccal mucosa, lips, tongue, and pharynx. The ulcers usually occur in crops and are painful.

Oral mucosal lesions occur in approximately 30 to 40% of patients with systemic lupus erythematosus. The lesions are most common on the hard or soft palate and range from small red areas to larger, tender, deep ulcerations. The oral ulcerations may be the first manifestations of an impending exacerbation of the disease. The ulcers are usually asymptomatic.

In Reiter's syndrome, which classically is a triad of conjunctivitis, urethritis, and arthritis, approximately 20% of patients will have evidence of stomatitis. Superficial erosions occur on the palate or buccal mucosa and are usually painless. The oral findings tend to be short lived, and they have a clean base and smooth edges.

Scleroderma (progressive systemic sclerosis) is

characterized by excessive deposition of collagen and other connective tissue components in skin and multiple internal organs. The skin around the mouth may become atrophic and fibrotic, restricting opening of the mouth. The mucosa of the oral aperture may look friable. The soft palate and uvula frequently will atrophy and aphthous stomatitis can ensue. Hypertrophy of the periodontal ligament can cause characteristic x-ray changes around the dental roots. Speech, oral hygiene, taste, and touch perception in the oral cavity may be severely impaired.

Aphthous ulcerations are also noted in the inflammatory bowel disorders, which include regional enteritis and ulcerative colitis. Granulomatous lesions in the mouth have been noted in Crohn's disease, and the oral manifestations may precede, coincide with, or follow the onset of arthritis.

Esophageal Disease

Esophageal involvement is common in scleroderma. The prominent clinical features are due to abnormal gastrointestinal motility. Patients may present with dysphagia secondary to either esophageal stricture or disturbed esophageal peristalsis. Frequently, the patients will be asymptomatic and still have significant esophageal motor abnormalities documented by manometry or barium swallow. Fluoroscopic examination may show a delay in the esophageal transit time with the patient recumbent, but the barium rapidly falls into the stomach when the patient stands. This is in contrast to those patients who may have achalasia who retain their barium in the esophagus even with the patient standing. Reflux of acid peptic gastric secretions of the lower esophagus is common, leading to esophagitis and potential stricture formation.

In contrast to scleroderma, the striated muscles of the hypopharynx and proximal esophagus are often involved in dermatomyositis leading to problems of deglutition and not infrequently tracheal aspiration. Peristalsis may be diminished and poorly coordinated, and the esophagus may become moderately dilated. However, reflux esophagitis, stricture, and hiatal hernia are not significant problems.

Most gastrointestinal manifestations of systemic

*Duluth Clinic, Duluth, Minnesota

GASTROINTESTINAL MANIFESTATIONS — LEFF

SUMMARY OF UPPER GASTROINTESTINAL INVOLVEMENT IN RHEUMATIC DISEASES

Disease	ORGAN SYSTEM			
	Oral Cavity	Esophagus	Stomach	Duodenum
Sjögren's Syndrome	oral ulcers	--	--	--
Behcet's Disease	oral ulcers	--	--	--
Systemic Lupus Erythematosus	oral ulcers	dysphagia	--	--
Reiter's Syndrome	oral ulcers	--	--	--
Scleroderma	oral ulcers dental caries restricted mouth opening	reflux esophagitis stricture	gastric retention	megaduodenum
Dermatomyositis	--	deglutition	--	megaduodenum
Inflammatory Bowel Disease (Regional Enteritis and Ulcerative Colitis)	oral ulcers	--	--	inflammation

lupus erythematosus do not occur in the upper gastrointestinal tract. However, approximately 7-10% of patients with this disease may have esophageal motility dysfunction giving rise to symptoms of dysphagia.

Gastric and Duodenal Involvement

Involvement of the stomach and duodenum in rheumatic diseases is uncommon. When it does occur, it most frequently is seen with scleroderma and occasionally with dermatomyositis. Scleroderma will frequently have radiographic evidence of gastric retention and megaduodenum as a result of ineffective peristalsis. The third part of the duodenum can appear compressed as is seen in the superior mesenteric artery syndrome. In patients with dermatomyositis, upper gastrointestinal hemorrhage from the stomach due to mucosal ulcerations may occur even in the absence of steroid therapy. In addition, like scleroderma, megaduodenum may occur.

Medications in Rheumatic Diseases and Upper Gastrointestinal Manifestations

There are no specific lesions associated with rheumatoid arthritis in the upper gastrointestinal tract. However, many drugs used in the treatment of rheumatoid arthritis and other connective tissue disease may cause upper gastrointestinal tract abnormalities.

Penicillamine, a remittive drug used in the treatment of rheumatoid arthritis, may cause the development of painful oral ulcers in 10% of patients who are taking a mean daily dose of 500 mg. Stomatitis usually develops in the first six months of therapy and may be associated with dysgeusia. The altered taste sensation develops in about 20% of patients and peaks in the first three months. The dysgeusia is usually tolerable and is reversible in one to two months whether or not the drug is continued.

The use of Gold compounds in treating rheumatoid arthritis can cause stomatitis. The ulcers are usually painful and occur in approximately 10% of patients on Gold therapy. This side effect can often be surmounted by stopping injections and then resuming Gold therapy in low doses and gradually increasing the dosage to tolerance.

There is a higher incidence of peptic ulcer disease in many patients with rheumatic diseases who are being medically managed. Many of these patients are taking associated nonsteroidal anti-inflammatory drugs including the salicylates. Virtually any of the nonsteroidal anti-inflammatory agents can cause an increase in gastric ulcer disease. Corticosteroids, are also frequently used in the management of patients with rheumatic diseases. There appears to be significant association between the use of corticosteroids and the increased risk of peptic ulcer and gastrointestinal hemorrhage.

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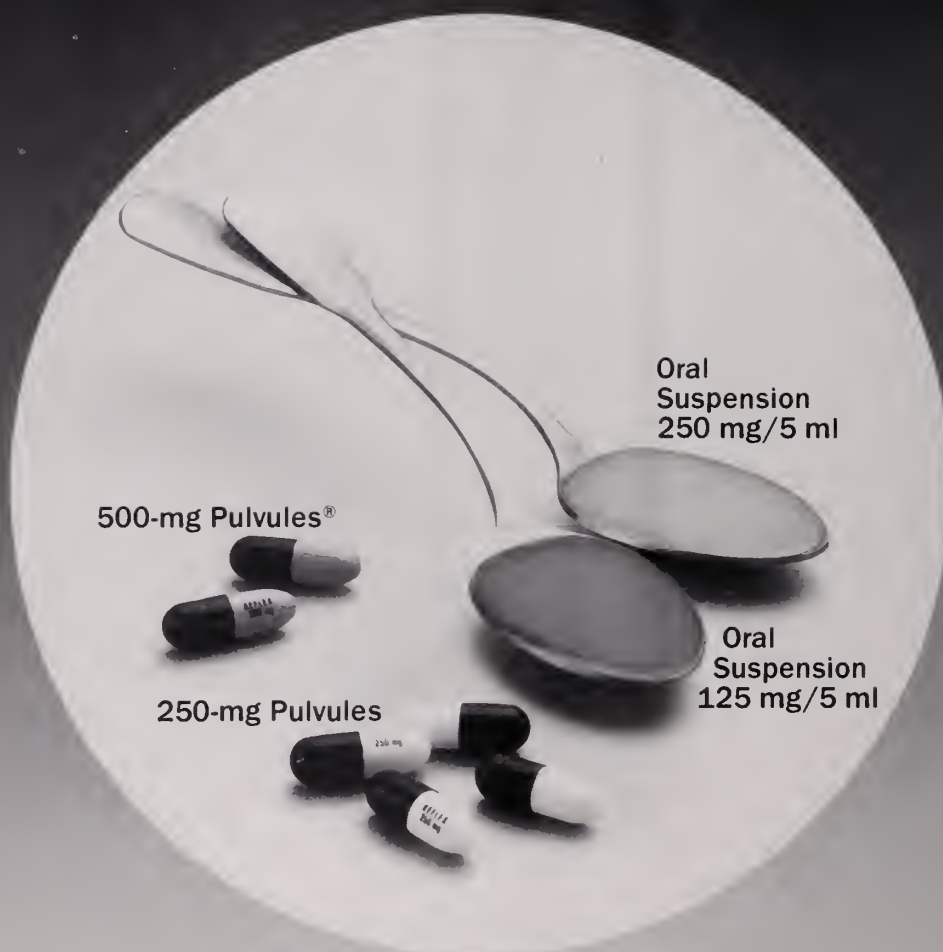
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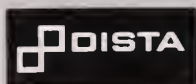
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Allegations

Negligent treatment of a Colles fracture and negligent failure to refer.

Facts of Case

The patient, a 50-year-old secretary, was first seen in the emergency room on July 4 for a Colles fracture of the right wrist with "some displacement." Dr. F, a family physician, stated that he normally would have referred her to an orthopedic surgeon, but that his usual consultant was unavailable. Dr. F splinted the wrist and told the patient to return in two days.

On July 6, Dr. F placed the wrist in a cast. He later stated that he consulted with an orthopedist on that day, but no record of this consultation was made. He also failed to document that he told the patient to return in one week for Xrays. Because Dr. F was out of town, the patient was seen in follow-up by Dr. M. She was examined on July 13, but no Xrays were taken on this visit. Xrays were taken on July 20, but no readings were recorded and, when a malpractice claim was asserted, neither Dr. F nor Dr. M recalled seeing the Xrays. Later review by an orthopedic surgeon revealed that these films showed significant displacement of the wrist.

When Dr. M removed the cast on August 12, the patient had marked deformity, limited range of motion, and complaints of pain. She was seen again by Dr. F on August 17, and was referred for physical therapy. After one year, the patient was rated with a 10% permanent disability of the right arm. A lawsuit was then filed against Dr. F and his professional association.

Disposition: \$30,000 settlement.

Reasons for Settlement

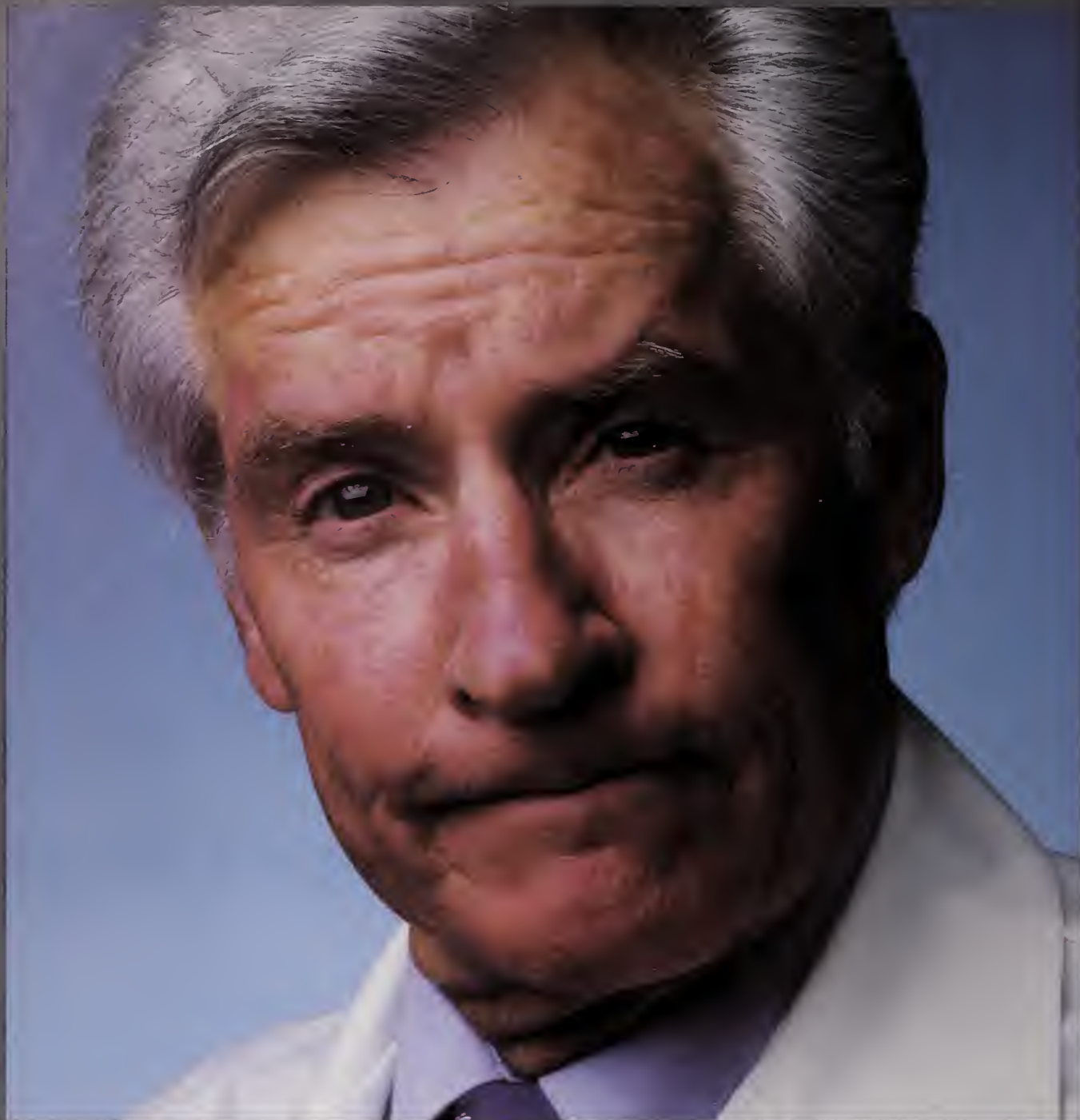
The plaintiff in this case obtained an expert opinion stating that Dr. F was negligent in failing to refer the patient to an orthopedic surgeon and in failing to do an open reduction of the fracture on July 4. The plaintiff's expert contended that, had an open reduction been done, the patient would have had minimal residual disability. Experts for the defense argued that the initial treatment by Dr. F was appropriate. However, they agreed that the wrist should have been re-x-rayed and reduced within seven to 10 days of the injury. Settlement value included the costs of physical therapy, lost wages due to the patient's inability to continue typing, and pain and suffering.

Risk Management Comment

A frequent allegation against family physicians is the negligent failure to refer patients with fractures to orthopedic surgeons. Physicians in family and general practice may be held to the standard of care of specialists if they undertake treatment of problems that arguably should be referred. Treatment of fractures will, in many cases, result in family physicians being judged by the higher standards applied to orthopedists. Physicians should freely utilize consultation and referral when presented with cases beyond their training and areas of expertise. When consultations are obtained, they should be carefully documented in the medical record.

One important purpose of the medical record is to communicate with other health care professionals involved with the patient. Documentation should include plans for follow-up diagnostic tests or treatment so that another physician, covering for the patient's primary physician, can assure continuity of care.

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Major Complications of Leukemia†

MARTIN M. OKEN, M.D.*

Major complications of acute leukemia fall into four categories: (1) bone marrow failure; (2) problems attributable to the leukemia cell proliferation; (3) treatment toxicity; and (4) psychosocial problems. Recognition and control of these complications are critical to the survival and well-being of the leukemia patient.

COMPLICATIONS OF ACUTE LEUKEMIA and its therapy prevent the physician from simply making the diagnosis, administering definitive therapy and then waiting with the patient for the remission or cure that will generally follow. Leukemia complications may be divided into four groups by mechanism. These are: (1) complications of leukemia-induced bone marrow failure; (2) complications related to the proliferation of leukemic cells; (3) treatment toxicity and (4) psychosocial problems. For the sake of focus, this overview will emphasize the complications of acute leukemia and will include only occasional references to other forms of leukemia. Late or delayed complications, psychosocial problems and complications that represent primarily treatment toxicity will be dealt with elsewhere in this symposium.

The most devastating and nearly universal complications of acute leukemia are infection and hemorrhage. While their cause is multifactorial, decreased production of granulocytes and platelets by the leukemic marrow represents the major predisposing factor. Until recent years the major cause of death in acute leukemia was hemorrhage, accounting for 50-65% of acute leukemia deaths. A more recent study of causes of death in acute leukemia documents the emergence of a different pattern.¹ With the ready availability of exogenous platelets and the increasing use of prophylactic platelet transfusion, infection has replaced hemorrhage as the leading cause of leukemic death accounting for 66% of deaths. When infection complicated by hemorrhage is added, 75% of leukemic deaths are infection-related compared to 24% that are hemorrhage-related and only 15% due to

hemorrhage alone.

The relationship between the degree of granulocytopenia and infection is well established.² Nearly 40% of patient-days with granulocyte counts less than 500/mm³ are complicated by infection. With granulocytopenia less than 100 cells/mm³ the proportion of days with infection exceeds 50%. The relevance of these figures is emphasized by the fact that current induction regimens for AML typically induce granulocytopenia to less than 100 cells/mm³ for two weeks or more. Two-thirds of major infections in acute leukemia are bacterial with a high proportion of these caused by gram negative rods. The organism, sites of infection and treatment approaches will be discussed elsewhere. The importance of prompt recognition and equally prompt treatment of infection in leukemic patients cannot be overemphasized. It is probably the major factor, along with the effectiveness of the anti-leukemic chemotherapy, that can impact on survival.

Bleeding, like infection, is a leukemia complication most frequently related to bone marrow failure. Platelet dysfunction secondary to drugs such as penicillins or cephalosporins or to intrinsically abnormal platelets produced by the leukemic marrow may also contribute to the bleeding tendency. Disseminated intravascular coagulation requiring heparin therapy is characteristic of acute promyelocytic leukemia (M3) but may be seen less frequently and usually in less severe forms in other types of acute leukemia.³

The excessive proliferation of leukemia cells may lead to a variety of metabolic complications. The most common of these, particularly in acute leukemia and CML, is hyperuricemia with the risk of uric acid nephropathy. The daily urinary excretion of uric acid may increase 50 times above normal. To complicate this, leukemia cells on lysis may release increased amounts of purines (to be catabolized to uric acid) as well as a variety of acid anions which, if not counteracted, can yield an acid urine resulting in a 20-fold

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†Presented at symposium, "Leukemia Progress — 1984," Saturday, April 14, 1984, Mayo Auditorium, University of Minnesota, Minneapolis, Minnesota.

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decrease in the solubility of uric acid. The use of allopurinol, adequate hydration and urine alkalinization, when needed, are important to prevent renal injury.

Hypokalemia has been observed in up to 59% of leukemia patients.⁴ This may be related in some instances to the excessive lysozymuria seen in monocytic and monomyelocytic leukemias,⁵ although other factors such as antibiotics may be equally important.

Other less frequent but potentially severe metabolic problems complicating acute leukemia include: hypophosphatemia,⁶ hypercalcemia,⁷ hyperphosphatemia,⁸ and lactic acidosis.⁹ With hypokalemia and often with hypophosphatemia, the effects of infection rather than the leukemic process itself appear to lie at the root of the metabolic disorder. Sometimes the rapid destruction of a great mass of leukemia cells leads to an acute tumor lysis syndrome with hyperkalemia, hyperphosphatemia, hypocalcemia and acute urate nephropathy.

Patients with hyperleukocytosis, usually defined for these purposes as greater than 50,000 blast cells/mm,³ are at risk of developing severe leukostasis with disastrous syndromes involving the pulmonary and central nervous systems.¹⁰⁻¹² These problems are most likely to occur in AML and CML blast crisis but may also occur at a lower frequency in ALL with hyperleukocytosis. Pulmonary signs of hyperleukocytosis include tachypnea, dyspnea and severe hypoxia. The latter must be differentiated from "pseudohypoxia" which can result from *in vitro* consumption of oxygen by blast cells in hyperleukocytic blood. Central nervous system signs of hyperleukocytosis include stupor, delirium, dizziness, tinnitus, ataxia, visual problems, papilledema, and in many instances catastrophic intracranial hemorrhage. The gravity of hyperleukocytosis is demonstrated by one series in which leukocyte thrombi or aggregates were found in 48 of 112 patients dying with AML or CML-BC.¹² In 31 of these patients the leukostasis was considered a major contributant to the death of

the patient. Eighty percent of these patients had WBCs greater than 100,000/mm.³ The disastrous effects of hyperleukocytosis in some patients may result from leukostasis, competition for oxygen in the microcirculation of leukemic blasts and by invasiveness of the leukemic blasts resulting in vessel wall damage. Interestingly, clinical problems with hyperleukocytosis are uncommon in CML-chronic phase and are extremely rare in CLL despite very high leukocyte counts in many patients. Treatment of severe hyperleukocytosis with high blast counts constitutes a medical emergency particularly when there is evidence of CNS involvement. Leukapheresis is an important rapid means of reducing blast counts. The small risk stemming from heparinization is outweighed by the benefits of rapid reduction of blast cells. An additional treatment consists of whole brain radiation to a dose of 500-800 rads given as two treatments separated by 24 hours. Third, and perhaps most important, is cytorreduction with chemotherapy directed at the specific type of leukemia. An initial 24-48 hours of chemotherapy hydroxyurea may be added to assure rapid decrease in blast counts.

Leukemic infiltration of extramedullary organs can represent another severe complication. Bone pain due to subperiosteal infiltration or more rarely osteolytic lesions or intramedullary infarcts may lead to excruciating bone pain which can be best relieved by effective chemotherapy or by local radiation. Chloromas or myeloblastomas are leukemic tumors, generally of soft tissue, that may occur at any time during the course of uncontrolled acute leukemia and in some instances may be the presenting sign. These tumors respond to systemic chemotherapy and also are quite radiosensitive.

CNS leukemia and gonadal infiltration with leukemic cells may occur in all types of acute leukemia but are most commonly seen in ALL and CML blast crisis. These problems are discussed elsewhere in the symposium in the context of late complications of leukemia and under the treatment of ALL.

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BALANCED CALCIUM CHANNEL BLOCKADE!



CARDIZEM[®]
(diltiazem HCl)

balances
potent
coronary
vasodilation
with a low
incidence of
side effects

Low incidence of side effects
CARDIZEM[®] (diltiazem HCl) produces an incidence of adverse reactions not greater than that reported with placebo therapy, thus contributing to the patient's sense of well-being.

*Cardizem is indicated in the treatment of angina pectoris due to coronary artery spasm and in the management of chronic stable angina (classic effort-associated angina) in patients who cannot tolerate therapy with beta-blockers and/or nitrates or who remain symptomatic despite adequate doses of these agents.

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Reduces angina attack frequency*
42% to 46% decrease reported in multicenter study.¹

Increases exercise tolerance*
In Bruce exercise test,² control patients averaged 8.0 minutes to onset of pain; Cardizem patients averaged 9.8 minutes ($P<.005$).

CARDIZEM[®]
(diltiazem HCl)

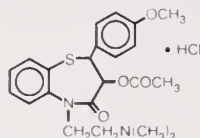
**THE BALANCED
CALCIUM CHANNEL BLOCKER**

PROFESSIONAL USE INFORMATION



DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)-one, 3-(acetyloxy)-5-[2-[(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-monohydrochloride, (+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. **Angina Due to Coronary Artery Spasm:** CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect, cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Conductive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS AND ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.4%), asthenia (1.2%), AV block (1.1%). In addition, the following adverse reactions were reported infrequently (less than 1%) with the order of presentation corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and amnesia.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vomit, mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episodic vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single 60 mg dose of CARDIZEM.

The following postmarketing events have been reported frequently in patients receiving CARDIZEM: erythema multiforme, leukopenia, and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (0.60 to 1.0 mg). If there is no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed degree AV block should be treated with diacetic pacing.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levorotary bitartrate).

Actual treatment and dosage should depend on the severity of clinical situation and the judgment and experience of the physician.

The oral LD₅₀'s in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD₅₀'s in these species were 60 and 38 mg/kg, respectively. The oral LD₅₀ in dogs is considered to be in excess of 50 mg/kg, while lethal doses in monkeys at 360 mg/kg. The toxic dose in man is not known, but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals at bedtime, dosage should be increased gradually (given in divided doses three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage appears to be 180 to 240 mg/day. There are no available data concerning dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be administered with short- and long-acting nitrates, but have been no controlled studies to evaluate the antianginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (NDC 0088-1771-47) and in Unit Dose Identification Packs of 100 (NDC 0088-1771-49). Each green tablet is engraved with MARION on one side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and Unit Dose Identification Packs of 100 (NDC 0088-1772-49). Each tablet is engraved with MARION on one side and 1772 on the other.

Issued 4

Another patient benefit product from



Extrarenal Wilms' Tumor

DAVID W. TODD, M.D.,* RUDY ROSKOS, M.D.,* and JERRY BALDWIN, M.D.*

Fewer than twenty cases of extrarenal Wilms' tumor have been reported in the world literature. In the past year, we have encountered two patients with this disease entity. They were treated according to the National Wilms' Tumor Study protocol, using postoperative radiation and chemotherapy. This paper presents these cases and reviews the literature reports on extrarenal Wilms' tumor.

A SIX-YEAR-OLD Caucasian male presented to his physician in April 1981 with a two day history of right lower quadrant abdominal pain after having been kicked in the abdomen by a schoolmate. He also complained of vomiting and pain with voiding. His past medical history was negative for prior surgery or hospitalization, and he was not taking any medication. Hospital admission laboratory studies revealed a WBC count of 19,350 and a Hgb of 13 g/dl. The patient was taken to surgery for an appendectomy.

During surgery, a fairly extensive retroperitoneal cystic mass with the appendix and cecum buried within it was found. The cyst was opened and drained of cheesy material and blood. After specimens were obtained for culture, cytology and histology studies, the mass was closed. Shortly after surgery, the patient began to bleed internally. He was given one unit of blood, and transferred to our institution.

On arrival, his abdomen was diffusely tender with no bowel sounds. Laboratory studies revealed a WBC count of 26,500 with a normal differential count and a Hgb of 12 g/dl. The patient had a low grade fever. The initial clinical impression was periappendiceal abscess.

The histology examination of the tumor showed compact nests of small primitive cells forming rudimentary glomeruli and tubular structures (Figure 1). Electron micrographs showed both blastematosus and rhabdomyomatous elements. A diagnosis of Wilms' tumor was made by the electron microscopist. The referee pathologist for the National Wilms' Tumor Study Group (NWTSG) confirmed this diagnosis.

A CT scan showed a 7 cm homogenous mass arising at the level of the iliac crest and descending into the pelvis. The retroperitoneal location was exerting

pressure on the ureters, causing some obstruction of both kidneys. The mass was located in the midline and to the left, displacing the bladder anteriorly and the recto-sigmoid colon to the right. The liver was noted to be free of any evidence of metastatic tumor and no periaortic nodes were visible above the iliac crest. A chest Xray was negative for metastases. An IVP showed bilateral hydronephrosis.

The patient was taken to surgery for removal of the tumor. A large, well encapsulated tumor was removed without difficulty. The periaortic and mesenteric lymph nodes and the liver appeared normal. Both kidneys were hydronephrotic. Examination of the anterior and posterior surfaces of the kidneys revealed no tumor masses. A bone marrow sample was within normal limits.

The patient had an uneventful postoperative course. He was treated according to National Wilms' Tumor Study Three, as a Stage III on Arm ETDD, and received 3975 rads of whole abdomen radiation. Chemotherapy was administered according to the study protocol, using dactinomycin, vincristine, and adriamycin. The patient remains free of disease two

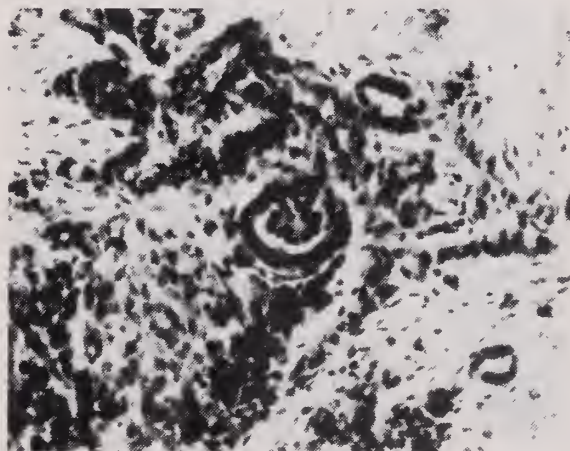


Fig. 1 — Photomicrograph (X160) of Case #1 illustrating tubular and primitive glomerular differentiation of the neoplasm.

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years after diagnosis.

Case #2

A six-year-old Caucasian female came to the attention of her pediatrician in December 1981, complaining of a mass in her left groin. Her parents first noticed the mass six weeks earlier after the patient had been kicked by a horse. They also noted that the mass had always felt firm, and although treatment with ice packs had appeared to cause the mass to decrease in size, it remained the "size of an egg." There was no history of recent upper respiratory tract infection, changes in bowel habits, bone pain, or hematuria. She had not been on any medication.

Physical examination revealed a left groin mass, 3-4 cm. in diameter. The remainder of the examination was unremarkable. There was no evidence of lymphadenopathy. The clinical impression was a probable cyst, hematoma, or abscess.

The patient was taken to surgery for excision of the mass. The mass was located between the external inguinal ring and the pubic tubercle. It contained a large amount of necrotic tissue.

Histologic examination of the tumor revealed an infiltrating neoplasm composed of small basophilic epithelial cells. Tubular differentiation was quite apparent; however, definitive glomerular formation was not identified. No evidence of germ cell differentiation was observed (Figure 2).

A diagnosis of Wilms' tumor arising in a sacrococcygeal teratoma was made, and was supported by the referee pathologist for the NWTSG.

Further postoperative studies included urinalysis, intravenous pyelogram, chest Xray, skeletal survey, bone scan, and bone marrow, which were all unre-

markable. A CT scan of the abdomen and pelvis revealed a 7 cm circular, presacral mass displacing the rectum and the bladder anteriorly. The mass was cystic in most areas, but also had areas with amorphous calcifications. There was no evidence of bone destruction.

The patient was taken to surgery again for excision of the presacral mass and wider excision of the groin area. This was accomplished without difficulty or complications. There was no direct communication between the two areas, indicating the groin mass was a metastasis.

Microscopic examination of the tumor showed a poorly differentiated small cell tumor, which in many areas showed tubular characteristics as noted in the tissue from the first operatin.

According to the National Wilms' Tumor Study Three, this was defined as a Stage IV tumor and was treated with 4680 rad of abdominal and pelvic radiation. Chemotherapy was administered according to Arm DD of the National Wilms' Tumor Study Three with dactinomycin, vincristine and adriamycin. Six months into treatment the patient developed a 2 cm. pulmonary nodule. The nodule regressed with Bleomycin, Velban, Cisplatinum, Cytosar, and dactinomycin and local radiation. Chemotherapy was continued eight months when a local recurrence in the pelvis and further pulmonary metastases were noted. Whole lung radiation and additional abdominal radiation were given. The patient developed disease in the liver, obtained a brief remission with VM-26, but rapidly progressed and died nineteen months after initial diagnosis.

Treatment Protocol

The treatment of extrarenal Wilms' tumor is not standardized and only recently have patients with this disease been treated according to the National Wilms' Tumor Study protocol. This protocol, which was used in the treatment of our two cases, consists of the use of postoperative radiation and the use of vincristine, dactinomycin and adriamycin.

Fourteen patients have been reported to have extrarenal Wilms' tumor without other associated teratomatous elements (Table 1). There are reports of treatment modalities in eleven of the fourteen cases. Eight of the patients received radiation to the tumor site. Of these, two were treated with radiation alone;^{6,14} four received radiation as well as vincristine and dactinomycin.^{5,11,15,16} one patient received radiation and dactinomycin alone¹⁴ and another received radiation and a combination of

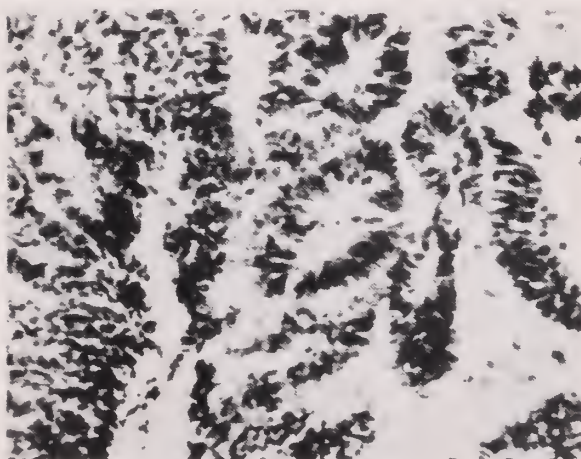


Fig. 2 — Photomicrograph (X160) of Case #2 illustrating marked tubular differentiation of the tumor; distinct glomerular differentiation is not present.

dactinomycin, vincristine and adriamycin.⁹ Two of the patients received chemotherapy without radiation.^{3,9}

Patient status at the last follow-up was reported in thirteen of the fourteen cases. Eleven of the patients were alive. The median disease-free survival period from the time of diagnosis was twelve months, with a range of 5 to 48 months. Of the two patients who died, one had been treated with radiation and dactinomycin,¹⁴ and the other had received radiation, dactinomycin and vincristine.¹⁶

TABLE 1
Extrarenal Wilms' Tumor

Author	Treatment	Survival From Diagnosis (mos.)	Status At Last Follow-up
Taylor ¹¹	Rad, VCR, Dactino	6	A
Johnson ³	VCR, Dactino	12	A
Fried ⁴	—	—	—
Aterman ⁵	VCR, Dactino	7	A
	RADS 2000 (NWTS)		
McCauley ¹⁵	VCR, Dactino	48	A
	RADS 1500 (NWTS)		
Madanat ⁹	1) VCR, Dactino, Adria	32	A
	RADS 3800 (IRS)		
	2) VCR, Dactino, NO RAD	22	A
	(NWTS)		
Akhtor ²	—	18	A
Gaikwed ⁷	—	5	A
Thompson ¹⁴	1) Dactino	6	D
	RAD		
	2) RAD	24	A
Wu ¹⁶	VCR, Dactino	12	D
	RAD		
Edelstein ⁸	Dactino	8	A
Bhajeckar ⁶	RAD 5000	10	A

TABLE 2
Extrarenal Wilms' Tumor
With Teratomatous Elements

Author	Treatment	Survival From Diagnosis (mos.)	Status At Last Follow-up
Carney ¹⁰	RAD 2600	4	D
Tebbi ¹³	VCR, Dactino	46	A
	RAD 5400		
Ward ¹	Same Patient as Tebbi		
Malik ¹²	—	—	—

Great caution must be used in interpreting the disease-free survival rates because of the limited number of reported cases. In addition, standard radiation and standard chemotherapy were not employed nor was long-term follow-up provided. However, these case reports do indicate that radiation and the addition of vincristine plus dactinomycin does provide some effectiveness in the treatment of extrarenal Wilms' tumor. In addition, treatment using the National Wilms' Tumor protocol offers some standardization for the treatment of this disease.

Even less data is available for the type of tumor described by Ward.¹ The patient reported by Ward and Tebbi responded to vincristine, dactinomycin and radiation, and is disease-free at 46 months.^{1,13} A patient with similar pathologic findings reported by Carney died four months after receiving radiation alone.¹⁰ No treatment detail or length of survival was reported for Malik's patient.¹²

Discussion

Extrarenal Wilms' tumor (nephroblastoma) has been reported arising both in teratomas and in areas in which no evidence of any teratomatous origin has been found. Therefore, there is a variable histogenesis.

Both of the tumors in our two cases clearly originated in presacral retroperitoneal teratomas. Nephrogenic tissue is in general an uncommon component of teratomas.¹

Approximately half of the cases described in the literature are located in presacral teratomas. Several have been described just below, but attached to a kidney.^{3,4,5,6,8} Others presented as a mass in the inguinal canal^{2,9,11} as did our second case.

Teratomas are usually derived from all three germinal layers (ectoderm, mesoderm and endoderm). Frequently found elements in teratomas include skin and its appendages and glandular issue, since ectoderm and mesoderm may frequently produce adipose tissue, cartilage and smooth muscle. Endoderm will produce respiratory and gastrointestinal epithelium.¹⁰ To find tissues such as lung, liver and kidney elements is rare.^{1,1,0}

Carney reports an adult (41-year-old male) with both Wilms' tumor and renal cell carcinoma arising in a retroperitoneal teratoma. Abdominal exploration and CT scan were not performed on either of the patients with tumors in the inguinal canal. Presacral teratoma, as in our second case, cannot be ruled out as a primary site of tumor.

Taylor and Myers¹¹ reported an extrarenal Wilms' tumor arising in the inguinal canal in a patient exposed to phenytoin in utero, and discussed other tumors associated with a similar exposure. Neither of our cases or others reported in the literature had a similar history.

The clinical course of the cases in the literature review and for our cases has seemed to parallel the course of Wilms' tumor in general.

Summary

Two cases of extrarenal Wilms' tumor are presented. These originated in presacral retroperitoneal

teratomas. A review of the literature shows fewer than twenty cases of extrarenal Wilms' tumor have been reported in the world literature and half of the cases are located in presacral teratomas. The treatment is according to the National Wilms' Tumor Study protocol, using postoperative radiation and chemotherapy.

Acknowledgments

The authors thank Joan Workman of the Department of Surgery of the University of North Dakota School of Medicine for assistance with the manuscript.

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Office Management of Common Orthopaedic Problems

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Care of the Critically Ill Child

RICHARD C. GEHRZ, M.D.*

Recent advances in scientific knowledge and biomedical technology have greatly facilitated the care of critically ill children. Advances in mechanical ventilation, external support of the hemodynamic system, management of acute disorders of the central nervous system, dialysis and total parenteral nutrition have made possible the support of patients who would not have survived a few years ago. However, implementation of prolonged life support and ultimate quality of survival depends primarily on the quality of initial stabilization and transport. Current principles of basic, advanced, and prolonged life support in the pediatric patient are presented in this paper.

THE SPECIALTY OF critical care medicine has experienced a virtual explosion of scientific knowledge and biomedical technology in the past ten years.¹⁻⁴ As a result, it is now possible to support patients with acute compromise of vital organ systems who would have died just a short time ago. The use of invasive hemodynamic monitoring techniques and advances in the pharmacologic and mechanical support of the cardiovascular system has significantly altered the management of patients with hypovolemic, cardiogenic, and distributive shock. Patients with hypoventilation and/or hypoxia on a central nervous system or pulmonary basis can be adequately supported in most cases with modern techniques of mechanical ventilation. Increased understanding of the principles of basic nutrition and improved formulas for both enteric and parenteral hyperalimentation allow for biochemical support of the chronically debilitated, intensive care patient. New advances in blood banking and the increasing availability of peritoneal and/or hemodialysis have also made a major impact on the support of the critically ill patient. Recently, techniques of cerebral resuscitation in patients suffering focal or

global insults to the central nervous system have been proposed to improve the quality as well as quantity of survival.⁵⁻⁷ Associated with these measures is an ever increasing concern over the ethical and medico-legal dilemmas associated with prolonged life support of the critically ill patient.

Only recently have the advances in critical medicine been available to the pediatric patient. In many cases, application of new approaches of monitoring and therapy have been limited by the lack of availability of appropriate technical skills and/or pediatric-sized equipment. Development of specialized critical care pediatric units at St. Paul Children's Hospital and other institutions has now made it possible to provide prolonged intensive life support for the critically ill child. Our recent experience has illustrated that virtually all techniques in critical care medicine that are accepted practice on adult units are equally applicable to the pediatric patient.

The stabilization and support of the critically ill child requires the systematic application of basic principles of cardiopulmonary resuscitation, advanced life support measures in the emergency stabilization facility, and rapid implementation of prolonged life support measures that will sustain the

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TABLE 1
Cardiopulmonary-Cerebral Resuscitation (CPCR)

Phase I	Phase II	Phase III
Emergency Oxygenation	Restart Spontaneous Circulation	Post-Resuscitative
Basic Life Support (BSL)	Advanced Life Support (ALS)	Life Support (PLS)
Airway	Drugs and fluids, I.V. lifeline	Gauging etiology, prognosis
Breathe	E.K.G. arrhythmias	Human mentation —
Circulate	Fibrillation treatment	— Cerebral resuscitation
		Intensive care

From Safar, P (Ref. 7)

function of vital organs. Safar has recently described a systematic approach to cardiopulmonary-cerebral resuscitation (CPCR) (Table 1).⁷

Successful management of the critically ill child begins with expedient, effective application of basic life support measures to ensure adequate oxygenation and circulation. The most sophisticated techniques of critical care medical science are of little or no value in the patient who has suffered prolonged global cerebral asphyxia as a result of inadequate basic life support. Principles of establishing an airway, effective breathing, and circulation by the use of mouth to mouth respiration and external cardiac compression are basically the same as those in an adult. However, the physician involved in resuscitation of an infant or child should be aware of certain unique requirements in pediatric resuscitation. It is important to avoid hyperextension of the head and neck in a young child, since this may result in collapse of the airway. The volume of each breath should be adjusted to the size of the victim and can best be gauged by watching for normal excursion of the chest on inspiration. In young infants, it may be preferable to assess the brachial pulse rather than the carotid pulse for evidence of cardiac function, since the short neck of a young infant may make successful palpation of the carotid artery difficult.

External cardiac compression in infants should be applied with the finger tips at the midsternum with a rate of 100 compressions per minute to a depth of $\frac{1}{2}$ -1 inch. Infant resuscitation generally is performed by a single individual. Therefore, ventilation should be provided following each five compressions with no discontinuation of cardiac support. Cardiac compression in the older child should be applied over the lower half of the sternum approximately 2-3 finger breadths above the xyphoid process. Compression should be applied with the heel of the hand to a depth of approximately 1-1½ inches. The compression rate should be applied at 80 per minute with a compression to respiration ratio of 5:1 (Table 2).

Successful implementation of basic life support depends upon immediate recognition of cardiorespiratory arrest. It is pertinent that most pediatric patients suffer primarily respiratory arrest, with secondary cardiac arrest only after prolonged asphyxia. Therefore, most successful pediatric resuscitations result from maintenance of an adequate airway and successful ventilation.

A patient should be immediately transferred to an emergency stabilization facility where measures of advanced life support can be implemented. Vascular access is frequently a major problem in the pediatric patient. Recent experience on our intensive care unit indicates that central venous cannulation of virtually all pediatric patients, even very young infants, can be accomplished by subclavian insertion over a guidewire using the Seldinger technique. Alternative sites include the internal jugular vein and the femoral veins. On many occasions, we have also successfully passed a central venous catheter over a J-tipped guidewire through the right external jugular vein. Only in cases of severe shock in very young infants has surgical exposure of the vein been required prior to successful cannulation.

Critical factors in the advanced life support of the critically ill child include hypoxemia, acidosis, circulatory failure, cardiac arrhythmia, and acute metabolic disturbances^{1,11} (Table 3). Endotracheal intubation and administration of 100% oxygen should be accomplished as soon as possible to correct hypoxemia and respiratory acidosis due to ineffective ventilation. Metabolic acidosis should be promptly corrected by the administration of sodium bicarbonate.

The patient with circulatory failure and hypotension should be rapidly assessed to determine etiology so appropriate therapeutic measures can be instituted. Arterial blood pressure is proportional to flow \times resistance. The flow, or cardiac output, is determined by the stroke volume of the heart and the rate of cardiac contractions. In most cases of shock, increasing peripheral vascular resistance increases cardiac work and de-

TABLE 2
Basic Life Support in Infants and Children
Technique of External Cardiac Compression
(Ref. 8-10)

Position	INFANTS (0-1 years)	CHILDREN (1-8 years)	ADULTS (over 8 years)
	Mid-sternum		Lower half of sternum 2-3 fingers above xyphoid
Compression	Tips of 2-3 fingers, $\frac{1}{2}$ -1 inch	Heel of 1 hand 1-1½ inches	Heels of 2 hands 1½-2 inches
Rate of Compression	100 per minute	80 per minute	60 per minute (1 man CPR, 80/min.)
Ratio of Cardiac Compression: Respiration	5:1	5:1	5:1 (1 man CPR, 15:2)

creases tissue perfusion despite clinical improvement in arterial blood pressure. Therefore therapeutic measures to improve arterial blood pressure should be directed primarily to improving cardiac output, not increasing resistance. Hypovolemia should be corrected immediately with either isotonic crystalloid or colloid solution. Sinus bradycardia may respond rapidly to atropine. States of decreased myocardial contractility may be improved by administration of sympathomimetic drugs such as epinephrine and isoproterenol, or inotropic agents such as calcium. Cardiac arrhythmias should be treated with the appropriate pharmacologic agents and/or cardioversion if cardiac output is impaired. In cases of ventricular asystole or electromechanical dissociation refractory to pharmacologic measures, placement of a transvenous or transthoracic pacemaker may be life saving. Immediate correction of hypoglycemia, hyper-

kalemia, or hypocalcemia may be necessary to reestablish effective cardiovascular function. Such metabolic disorders may be primary, or may result from prolonged ischemic states associated with cardiopulmonary arrest.

Once effective ventilation and circulation have been established by measures of basic and advanced life support, transport to a critical care unit should be arranged for implementation of prolonged intensive life support measures. In general, it is preferable to maintain the critically ill child in stable condition in the local emergency facility pending the arrival of a critical care transport team. This team can subsequently implement most measures of prolonged life support on the scene prior to transport.

Prolonged intensive life support can be divided into four major categories: hemodynamic intensive care support,^{12,13} respiratory intensive care support,^{14,15}

Table 3
Drugs Used in Advanced Life Support of Infants and Children
(From Stabilization of the Acutely Ill Child, Gehrz, RC and Tilelli, JA, (Ref. 1))

DRUG	DOSAGE AND ROUTE	REMARKS
1. Epinephrine (1:10,000)	0.5 ml/kg IC or IV (1:10,000) every 5-10 min x 2-3 (can also administer via endotracheal tube)	• As cardiostimulant in cardiac arrest or to coarsen ventricular fibrillation
2. NaHCO ₃ (50 mEq/50 ml)	0.5-1.0 mEq/kg IV or IC q 5 min x 2; then as indicated by pH, pCO ₂ ; or 1/2 of [0.3 x Base Deficit x wt (kg)]	• See Sigaard-Andersen nomogram on P. 39 to determine base deficit • See Sigaard-Andersen nomogram on P. 39 to determine base deficit
3. Calcium gluconate (10%)	0.5-1.0 ml/kg IC or IV q 5-10 min x 3	• Increases cardiac contractility • Counteracts hyperkalemia • Improves wide QRS complexes
4. Glucose (50%) (0.5 gm/ml)	0.5 gm/kg	• Increases immediate energy supply
5. Isoproterenol drip	0.05-2.0 mcg/kg/min (see table on P. 28 for instructions on mixing)	• Used for persistent bradycardia and for continuous cardiac stimulation • High incidence of serious arrhythmias
6. Dopamine or Dobutamine	5-30 mcg/kg/min (see table on P. 28 for instructions on mixing)	• Increases cardiac and urine output in cardiogenic shock • May be effective in the patient unresponsive to epinephrine
7. Lidocaine (Xylocaine®)	Bolus: 0.5-1.0 mg/kg IV (10%) Continuous infusion: 10-20 mcg/kg/min (See table on P. 28 for instructions on mixing)	• For persistent ventricular arrhythmias • Requires infuser pump • May accumulate to toxic levels, leading to seizures, myocardial depression
8. Atropine	0.01 mg/kg IV	• For sinus bradycardia
9. Glucagon	50 mcg/kg IV every 30 min	• For low cardiac output syndromes • Synergistic with Isuprel® • Effective in the presence of α -blockade • Minimal arrhythmia formation
10. Nitroprusside	IV drip 0.5-5.0 mcg/kg/min (Infusor pump required) Max. dose 3-3.5 mg/kg (See table on P. 28 for instructions on mixing)	• For peripheral vasodilation in cardiac failure and hypovolemia • For severe shock • Maintain adequate systolic blood pressure with volumes and/or cardiostimulant agents • Used as a vasodilator in shock
11. Steroids		
a. Hydrocortisone (Solu-Cortef®)	50-150 mg/kg IV x 1	
b. Methylprednisolone (Solu-Medrol®)	15-30 mg/kg IV x 1	
12. Furosemide (Lasix®)	1 mg/kg/dose IV	• May cause massive diuresis • Follow electrolytes (metabolic alkalosis may result)
13. Pancuronium (Pavulon®)	Newborn: 0.05-0.1 mg/kg IV Infant and older child: 0.15-0.20 mg/kg IV	• Initial paralyzing doses • Maintenance: 1/2 initial dose per hour
14. Morphine sulfate	0.1 mg/kg IV every 2-4 hr	• For sedation; i.e., in conjunction with paralyzing agent
15. External D.C. countershock	< 1 yr 25 watt-seconds 1-3 yr 50 watt-seconds 3-12 yr 75 watt-seconds ≥ 12 yr 100-250 watt-seconds	• For ventricular fibrillation • Don't convert tachyarrhythmias unless acute cardiac decompensation present • Use 1-2 dose for P.A.T. • If defibrillation is unsuccessful, increase energy by 25 watt-seconds

metabolic intensive care support, and brain-oriented intensive care support (Table 4).

Rapid assessment of the cardiovascular system and institution of appropriate hemodynamic monitoring is a priority in successful management of the critically ill infant or child.¹⁶ Patients with illnesses not affecting the cardio-respiratory system may be effectively monitored by conventional measures such as auscultatory arterial pressure by sphygmomanometry, pulse, clinical assessment of tissue perfusion, and accurate recording of intake and output. It is our opinion that advanced hemodynamic monitoring should be instituted in the following clinical situations: (1) Hypovolemic, cardiogenic, or distributive shock. (2) Adult respiratory distress syndrome requiring extreme measures of mechanical ventilation. (3) Patients with massive cerebral edema or those requiring the techniques of advanced cerebral resuscitation. (4) Patients with massive volume distribution problems, including those with massive gastrointestinal bleeding or complex surgical patients.

In these patients, catheters are placed in both the systemic arterial circulation and the pulmonary artery using the percutaneous Seldinger insertion technique. Systemic arterial catheters are most commonly placed in the radial or brachial artery unless percutaneous vascular access to these vessels is impossible and immediate establishment of central arterial pressure monitoring is required. In these cases, cannulation of the femoral artery may be selected. Arterial catheters have been inserted in more than 400 children on our intensive care unit with no major complications of infection or vascular compromise. Swan-Ganz catheterization of infants and children has been successfully accomplished in 120 patients on our pediatric intensive care unit.¹⁷ In virtually all cases, the catheter is placed through an introducer catheter located in the subclavian, internal jugular, or femoral vein and floated by continuous pressure wave monitoring at the bed side into the appropriate position in the right or left main pulmonary artery. Swan-Ganz catheterization has been accomplished without failure in all cases and required fluoroscopy in only one case, that of a 2.5 kg infant with severe pulmonary hypertension and cor pulmonale. No major complications have occurred with this technique. The presence of a Swan-Ganz catheter allows for continuous monitoring of pulmonary arterial pressures and right atrial pressures, measurement of the pulmonary artery wedge pressure which indirectly provides information regarding the end diastolic pressure of the left ventricle, cardiac output determination by the thermodilution technique, computation of intrapulmonary shunting

TABLE 4

Prolonged Intensive Life Support of Infants and Children

- I. Hemodynamic Intensive Care
 - Establish appropriate hemodynamic monitoring of cardiovascular function.
 - Insure optimal circulation.
- II. Respiratory Intensive Care
 - Assess pulmonary mechanics and gas exchange.
 - Provide mechanical respiratory assistance if required.
 - Provide optimal oxygenation.
- III. Metabolic Intensive Care
 - Evaluate metabolic parameters.
 - Correct acute disturbances.
 - Maintain homeostasis
- IV. Brain-Oriented Intensive Care
 - Maintain adequate oxygenation.
 - Maintain adequate cerebral perfusion.
 - Decrease or prevent cerebral edema.
 - Initiate appropriate brain monitoring.
 - Repeated clinical assessment.

due to ventilation-perfusion mismatch by sampling of mixed venous blood in the pulmonary artery, and computation of systemic and pulmonary vascular resistances.

Intensive support of the cardiovascular system should be directed toward optimizing cardiac function and maintaining adequate peripheral perfusion to prevent anaerobic metabolism. Appropriate administration of volume expanders, sympathomimetic agents, peripheral vasodilators, and blood products can be ensured when appropriate monitoring is available.

Support of the patient with respiratory failure requires rapid assessment of the status of pulmonary mechanics and gas exchange. Arterial blood gases provide a most useful and readily available measure of pulmonary function. Patients with respiratory failure based on hypoxia and/or hypercapnia should be intubated and mechanical respiratory assistance with positive pressure ventilation instituted. Optimal oxygenation should be provided by increasing inspired oxygen concentration, facilitating oxygen diffusion and decreasing intrapulmonary shunting by the use of end expiratory pressure, and correcting any hemodynamic contribution to states of pulmonary edema. An indwelling arterial catheter facilitates repeated sampling of arterial blood gases. In cases of severe respiratory insufficiency, continuous monitoring of arterial oxygenation with an indwelling oxygen saturation catheter or transcutaneous oxygen monitoring in younger infants may be extremely helpful. It is now possible to continuously monitor end-tidal respiratory gases by infrared detection techniques or mass spectrometry. These methods greatly facilitate recognition of acute complications of the mechanical ventilator system and help to more effectively wean

patients from respiratory assistance. Continuous monitoring of parameters of pulmonary mechanics, such as mean airway pressure, the ratio of dead space to tidal volume, and other pulmonary functions may also be extremely valuable.

Metabolic intensive care should be directed toward correction of any disturbances in acid-base balance, electrolytes, and glucose. Critically ill patients should receive aggressive nutritional support at the earliest possible time. In general, patients requiring intensive support for greater than 72 hours should have some form of hyperalimentation, either by the enteric or parenteral route. Parenteral hyperalimentation should include administration of dextrose, intralipid, and amino acid hydrolysates. In patients with compromised renal function, peritoneal dialysis or hemodialysis may also be life saving measures in the support of the critically ill patient.

Patients who have experienced global cerebral asphyxia due to cardiopulmonary arrest or those with states of massive cerebral edema due to trauma, infection, or metabolic diseases will require brain-oriented intensive care support.⁵⁻⁷ Prevention of further damage to the central nervous system and restoration of function of compromised neurons demands an aggressive and compulsive approach to all aspects of intensive life support. Fundamental to the successful resuscitation of the central nervous system is the maintenance of adequate oxygenation, adequate cerebral perfusion pressure to maintain circulation to the central nervous system, and maintenance of metabolic and thermal homeostasis.

Specific measures of cerebral resuscitation are directed primarily to those which decrease or prevent cerebral edema and those which decrease cerebral metabolism. Successful management of the patient with cerebral edema requires the use of advanced brain monitoring. Intracranial pressure monitoring with a subarachnoid screw, an epidural fiberoptic intracranial pressure monitor, or an intraventricular catheter is essential for the proper selection of therapeutic modalities for cerebral edema. Intermittent or continuous monitoring of cerebral electrical activity by conventional electroencephalography and determination of brain stem evoked responses is also a valuable adjunct to the management of these patients. Computerized axial tomography and radionuclide cerebral blood flow studies may also be of assistance

in determining the status of cerebral edema. Specific measures to decrease cerebral edema include fluid restriction, hyperventilation, steroids, and osmotic diuretics. Cerebral metabolism may be diminished by neuromuscular relaxation, barbiturate coma, and deep hypothermia. These latter measures are effective at least in part by decreasing cerebral edema.

Fundamental to the implementation of cerebral resuscitation is repeated clinical assessment of the patient. The Glasgow coma scale first reported by Teasdale et.al. in 1974 provides a simple, reproducible method for quantitating clinical neurological observations¹⁸ (Table 5).

TABLE 5
Glasgow Coma Scale¹⁸

Eye Opening	Spontaneous	4
	To speech	3
	To pain	2
	None	1
Best Verbal Response	Orientated	5
	Confused	4
	Inappropriate	3
	Incomprehensible	2
	None	1
Best Motor Response	Obeying	5
	Localizing	4
	Flexing	3
	Extending	2
	None	1

The many advances in pediatric intensive care medicine described in this paper give promise for improved quality and quantity of survival. Systematic evaluation of the efficacy and complications of critical care management of these patients is absolutely essential so that we can better improve our care for the future. Clearly, the critical care physician has a dual responsibility: to provide the most advanced level of support that will insure quality survival while recognizing at the earliest possible time the patient who can no longer benefit from continued support of vital organs. It is the professional and ethical responsibility of the critical care physician to limit the use of modern technology to the appropriate circumstances.

The preceding discussion has concentrated upon general principles of management of the critically ill patient as well as on the supportive management of critical factors associated with that illness. Our book entitled "Stabilization of the Acutely Ill Child" with recommendations regarding specific therapy is available on request to St. Paul Children's Hospital.

See references, page 621.

Dear Editor:

A number of older Indochinese refugees, widows as well as couples, are looking for work as housekeepers. With the increasing number of dual family careers, physicians and other professionals could both benefit from their services, as well as providing them with employment. The skills of people able to undertake this kind of work varies widely. Virtually all would be able to take on shopping, cooking, laundry, and housekeeping. Depending upon the individual (or couple), some might be able to take on home repair, gardening, driving, child care, serving at a party or so forth. Some have quite good skills at English or French, while others are only able to speak their indigenous languages (which can provide an opportunity to learn an Indochinese language).

As with all domestic help, a period of training, supervision, and "trying one another out" would be necessary. Usually both parties know within a few weeks to a few months whether the arrangement is viable.

Living arrangements and transportation also vary, depending upon the needs and resources of the employer and the employee. In some instances the domestic worker might live in the employer's home, while in other instances he/she might commute. Some people have need for help five or six days a week, while others need help only once or twice a week.

My friend and colleague from Laos, Dr. Chomchanh Soudaly, has shown his usual level of skill in helping to make such placements. He can be reached during the evenings and weekends at 529-6242. You can reach him by mail at 1410 Queen Avenue, Minneapolis, MN 55411.

Joseph Westermeyer, M.D.
University Hospitals

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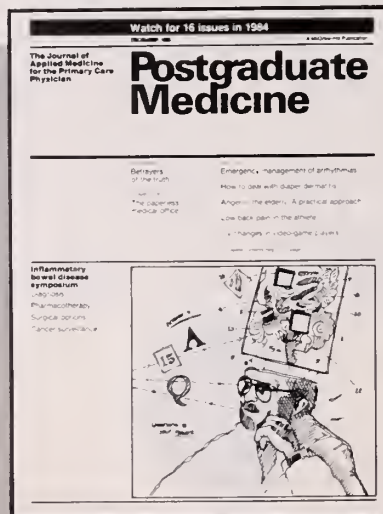


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Physician Contracting

LOIS WATTMAN DE WITT*

WITH NEW DELIVERY systems entering the market and established systems expanding at an amazing speed, physicians are forced to make long-term decisions regarding the future of their practices in short time-frames. These decisions require an understanding not only of expectations regarding their style of health care delivery but also an understanding of the nuances of negotiating and entering into long-term contractual agreements.

Moreover, these decisions require a long-range evaluation of where the physician or clinic desires to be positioned in the health care market. This evaluation may well necessitate the use of business, planning and legal consultants, a service which can be provided through the Minnesota Medical Services Corporation.

This article will highlight some general contracting guidelines the physician should consider prior to entering into any contractual arrangement. It will also provide a checklist of questions which should be answered before signing any contract. However, it is not intended to obviate the need to consult an attorney for an independent review of the specific provisions presented by the contract.

What Is a Contract?

"A contract is a promise or a set of promises, for breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty". [Restatement of Contracts]

This commonly used definition of a contract gives rise to two important elements: (1) a contract creates obligations on at least two parties to perform; and (2) that obligation to perform by both parties is legally enforceable. The legal enforceability of the contract necessitates that it be closely read and clearly understood by the physician prior to signing.

Negotiation

As the definition highlights, a contract is a promise or set of promises to perform in a certain manner.

*Associate Director, Division of Policy Analysis and Advocacy, Minnesota Medical Association.

These promises are, in most instances, open to negotiation between the physician and the business entity offering the contract.

For example, if a clinic is offered a contract by an HMO or another entity to become a provider clinic, the original contract offered should be viewed as an offer to negotiate the set of promises which may be eventually agreed upon. The physician need not agree to all the provisions provided and may well wish to negotiate provisions that more specifically define the performance expected of the business entity. Ultimately, the physician must be certain that he/she is capable of actually performing the requirements contained in the final contract.

When reviewing the contract, the physician should also remember that all provisions, not simply price, are open to negotiation. This negotiation of all provisions is especially important since frequently proposed contracts are written to reflect the best interests of the party issuing the contract.

The ability to negotiate differs significantly when identical contracts are mailed to physicians statewide offering them an opportunity to participate in the business entity's program. The new Medicare participation program is one such example. In that situation, there is no ability to negotiate any provisions of the contract.

Physicians should remember that their ultimate power in a competitive marketplace is to *not* sign the contract. If the business entity believes that the physician will sign whatever is offered, the physician has lost his/her power to negotiate.

Contractual Provisions

There are several specific provisions appearing in contracts that may create numerous questions and potential difficulties for the physician. The following examples highlight some of these provisions.

Hold Harmless Clause

"clinic shall defend, hold harmless and indemnify business entity against any and all claims, liabilities, damages, and judgments imposed upon, incurred by, or asserted against business entity which may arise out of or derive from medical and surgical care and services pro-

vided, or to be provided, by clinic hereunder"

Commonly referred to as the "hold harmless clause", this provision goes beyond the traditional coverage of the physician's liability policy. If presented with such a clause, the physician should contact his/her liability carrier and determine whether it is possible to add the rider coverage necessary to meet the financial obligations of the hold harmless clause.

Termination Clause

"This agreement shall be effective October 1, 1983 and shall be for an initial term ending December 31, 1986. Provided, however, that either party may terminate this agreement upon ninety (90) days written notice to the other party. If so terminated, the clinic shall maintain responsibility for the care of all patients covered by the business entity until such time as the patients are able to make the changes necessary for other treatment".

What appears to be a simple termination clause becomes more complicated with the additional requirement that the clinic continue caring for the business entity's patients. If the termination occurred shortly after the open enrollment period at the patient's place of employment, the clinic may well be obligated to provide care to that patient until the next open enrollment, a time period that may be close to one additional year.

Exclusivity Clauses

"During the course of this agreement, and for a period of 180 days after its termination, the clinic shall not enter into any new agreements with other health maintenance organizations or preferred provider groups to provide for the delivery of health services".

While not a strict exclusivity clause since only new agreements are prohibited, this clause may create serious problems for the physician in assuring continuous care to his/her patients. The physician should closely consider the ramifications of the 180 day post-termination prohibition on contracting and the impact of the provision on his/her practice. (For a more complete discussion of exclusivity clauses see "Fostering or Impeding Competition," MINNESOTA MEDICINE, October 1984, page 581.)

General Contract Theories

There are several general theories of contract law that apply whenever there is a contractual agreement.

Some theories that should be remembered when the physician signs a contract are:

1. Where there is a written agreement intended to embody the full and final expression of the parties to the contract, any other expressions, written or oral, that are made prior to or contemporaneous with the written agreement are inadmissible as evidence in a subsequent court action.

2. The Court will construe words to have their "ordinary" meaning unless the contract clearly shows that they were intended to be used in a different sense.

3. All parties to the contract are presumed to know the law regarding any of the contract provisions.

4. Any handwritten amendments to the original copy of the contract must be initialed by all parties.

5. Professionals will be held to a higher standard by the court in their ability to understand the provisions of the contract.

Analyzing the Contract

The first step in analyzing the contract is simple: READ THE CONTRACT. While that step may seem obvious, it is frequently overlooked by many people, including physicians.

The physician must understand all the contract requirements and must be capable of performing those requirements. For, as the definition of contracts pointed out, the contract is a legally enforceable document for both parties to the agreement.

The following checklist is provided as a guide for analyzing the contract. While no list of questions is complete, it will provide a guide for reviewing what provisions are commonly appearing in today's contracts.

Contracting Checklist*

1. What is the past financial track record, reputation and marketplace perception of the business entity?

2. Are the definitions used in the contract appropriate? Do they reflect common usage?

3. Are all parties to the contract clearly identified?

4. What obligations are imposed on the physician as a contracting physician? Are you willing and able to comply with them?

5. Are there policies that you must adhere to that are not contained in the contract (e.g. bylaws, articles)? Are copies of those documents attached? Is there provision for notification of amendment of these documents? Are the amendments binding on you?

6. How will compensation of the physician be made? Is there any policy for maintenance and dis-

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tribution of a reserve? Can this compensation policy be unilaterally altered by the business entity?

7. What rights does the physician have if payment is not made by the business entity?

8. Are there any protections against retroactive denial?

9. What are the financial obligations of the patient? Is there any provision for enforcement?

10. Are there limitations as to whom and to what facilities referrals may be made? Are the approved places of referral identified in the contract? What are the ramifications of other referrals? Does the referring physician have any responsibility for payment to the referral physician or facility?

11. Does the referral physician have any guarantee of payment? To whom should he look for that payment? Should the referral relationship be recognized through a contract?

12. Does the contract create any other financial obligations for physicians? Is there any liability for payment of services ordered?

13. Are there any provisions regarding risk-sharing and reinsurance? Are the obligations of both the physician and the business entity explicit?

14. Does anyone other than the physician make decisions regarding quality of care? If so, what criteria are utilized?

15. What rights are given by the physician to the business entity for review of both patients' records and financial records of the physician? Do these provisions comply with state law?

16. What requirements are there for compliance and/or participation in utilization review activities? What does participation and compliance mean? What are the consequences of non-compliance or non-participation?

17. Is there a written utilization review plan? Is a copy attached or available for review? Will the physician be notified of any changes in the plan?

18. Does the physician indemnify the business entity against liability? If so, does your professional liability policy cover such contractual liability?

19. What requirements are there for 24 hour care? Does the physician assume any liability for a physician covering for him?

20. Who has responsibility for marketing the plan? Are the expectations of the marketing effort reasonable?

21. Is there any limitation on the ability of the physician to contract with other business entities during the duration of this contract or during a specified time period following its termination?

22. Under what circumstances can the contract be terminated? Are the rights of termination by the physician different from those of the business entity? Is there any conduct by the physician that gives the business entity the right to terminate the contract? Are there provisions for termination by the physician if the business entity becomes insolvent?

23. What are the notice requirements for termination? What are the responsibilities for notification of the enrollees/subscribers?

24. Are there any requirements for performance beyond the termination date of the contract?

25. Are there any limitations on the manner in which claims must be submitted to the business entity?

26. Does the physician have to accept all patients referred?

27. Does the contract mandate that a claim of professional liability against the physician be submitted to final and binding arbitration? What process is utilized? What are the time limits?

28. Are non-covered services clearly identified in the contract? Are there restrictions on billing the patient for those services?

29. Are there requirements for prior authorization before the performance of certain services? Are those services identified? How is prior authorization achieved?

30. What requirements are there for maintenance of hospital medical staff privileges?

31. Does the contract set minimum or maximum patient caseloads?

32. What rights does the business entity have to amend the contract unilaterally? What notice is required?

33. What is the term of the contract? Are there any automatic renewal provisions?

Conclusion

The purpose of any contract is to formalize the mutual agreement of two parties. To reach such mutual agreement, both sides must comprehend the ramifications of the agreement and understand its requirements and limitations. Only when both parties become actively involved in the negotiation process can this true mutual agreement be achieved.

There is no doubt that the business entity will actively pursue the negotiations and contract. The challenge for the physician is to take the time necessary to read and comprehend the contract, negotiate its provisions and finally, to perform to its mutually agreed upon expectations.

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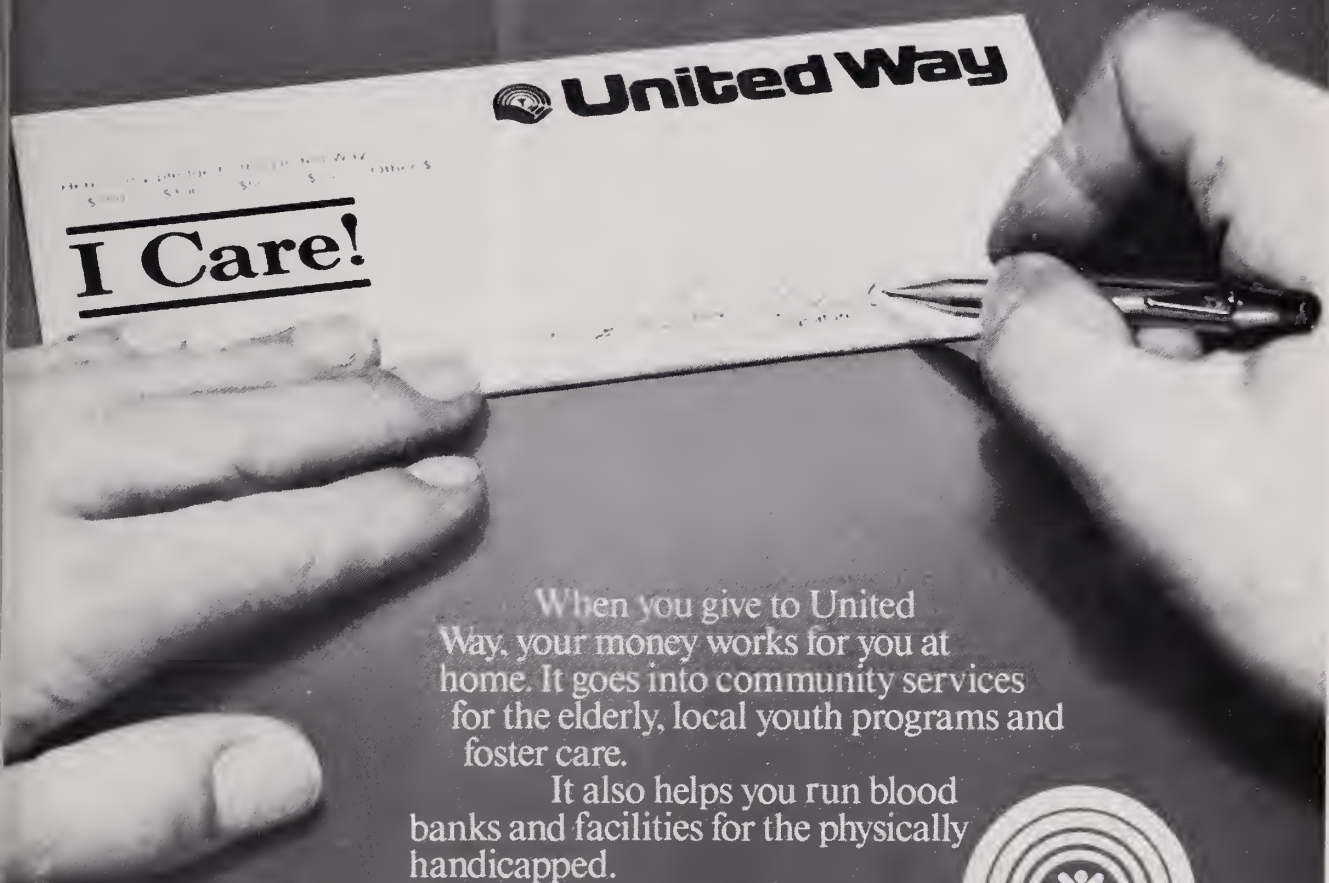
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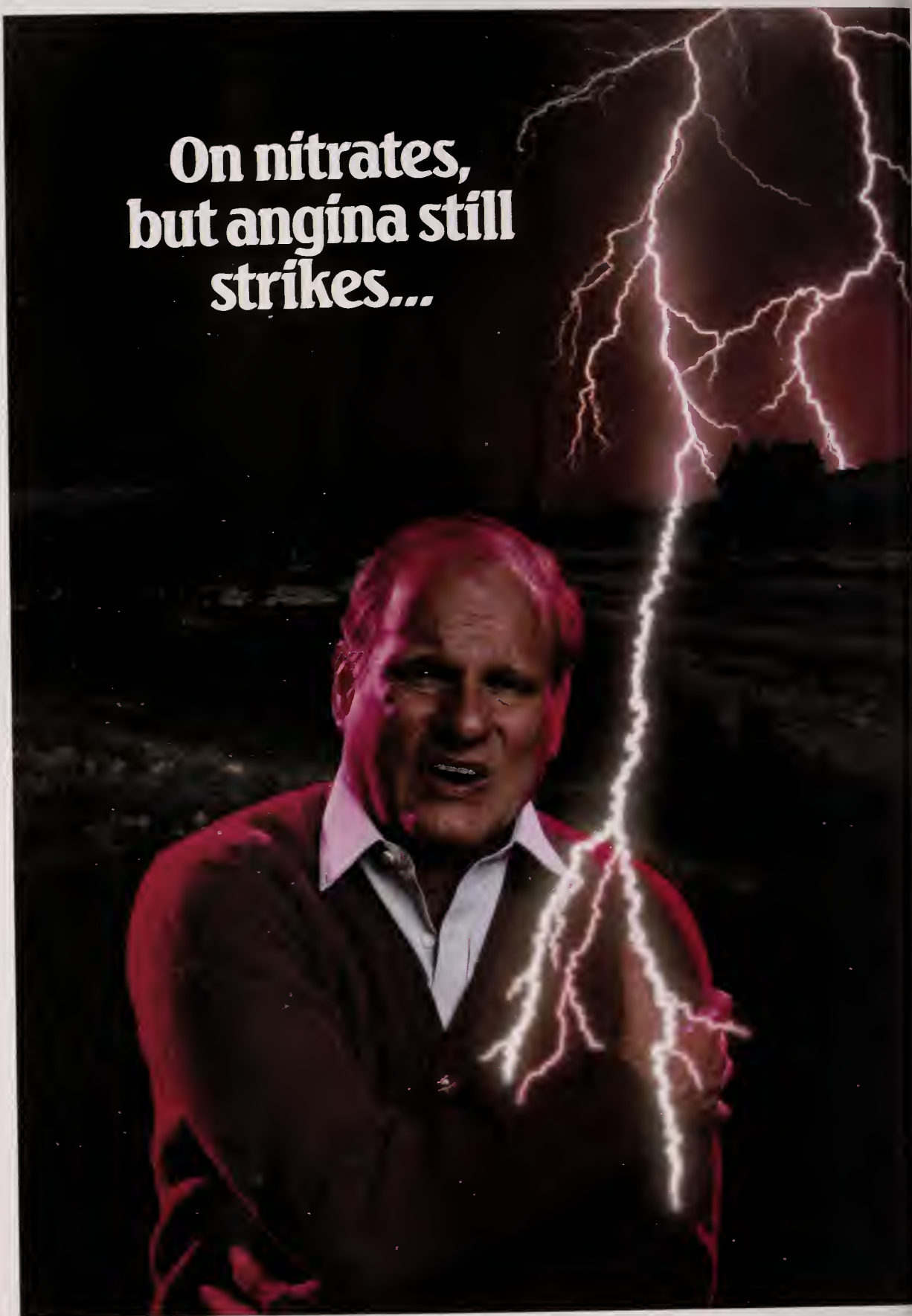
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For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

November, 1984

7 Pediatric Neurology/Neurosurgery; Continuing Medical Education, Univ. of Minnesota Medical School; Minneapolis, MN; CONTACT: Bart W. Galle, Ph.D., Interim Director, 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN, 612/373-8012.

9 E. T. Bell Institute of Pathology, Department of Laboratory medicine and Pathology, University of Minnesota will present, Annual Fall Symposium, "Current Concepts in Gastrointestinal Pathology," Mayo Memorial Auditorium, University of Minnesota, Minneapolis. CONTACT: CME, University of Minnesota, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455. (612) 373-8012.

10 Annual Medical Staff Meeting & Research Conference; St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth McIntyre, 612/221-3980.

10 Fall Seminar — Minnesota Society of Clinical Pathologists; MN Society of Clinical Pathologists; Registry Hotel; CONTACT: Linda Lacher, 2221 University Avenue, SE — Suite 400, Mpls., MN 55414, 612/378-1875.

11 Dermatology for the Primary Care Physician; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

11 ENT for Primary Care Physicians; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

12-14 Clinical Review; Mayo Clinic/Mayo Foundation; Rochester, MN; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905, 507/284-2085.

15-17 Clinical Strategies in Primary Care Medicine; St. Paul-Ramsey Medical Center; Holiday Inn, Minneapolis, CONTACT: Ruth K. McIntyre, 612/221-3980.

16-17 5th Annual Seminar for CME Directors; Minnesota Medical Association; Riverwood Conference Center, Monticello, MN; CONTACT: Eugenia Kassir, 2221 University Ave. SE — Suite 400, Mpls., MN 55415, 612/378-1875.

16-17 Regional Meeting of the American College of Physicians in association with the MN Society of Internal Medicine & the American Society of Internal Medicine; American College of Physicians, MN Chapter; Hyatt-Regency Hotel; CONTACT: Alvin Schultz, M.D., Hennepin County Medical Center, Minneapolis, MN 55415, 612/347-2700.

17 Performance-Based Credentialing; Ramsey County Medical Society; Granada Royale Homotel, St. Paul; CONTACT: Sue Linder, 612/291-1209

26-27 Basic Life Support Course; Methodist Hospital; St Louis Park, MN; CONTACT: Janell Haugen, 612/932-5189.

26-28 Advanced Cardiac Life Support Course; North Memorial Medical Center; Minneapolis, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale No., Robbinsdale, MN 55422, 612/520-5535.

30 Seventeenth Annual Symposium on Obstetrics & Gynecology; North Memorial Medical Center; Minneapolis, MN; CONTACT: Eric Gilster, M.D., 3210 Lowry Ave. No., Mpls., MN 55422, 612/588-4625.

December 1984

6-8 Coronary Heart Disease: A Comprehensive Review of Principles and Practice; St. Paul-Ramsey Medical Center; Radisson Plaza, St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

February, 1985

4-8 Clinical Gastroenterology, 1985; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

4-9 Northwestern Med. Association-40th Annual Meeting; CME, Univ. of MN Medical School; Sun Valley, Idaho; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

8 Burn Care Update — 1985; St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

15 Burn Care Update; Univ. of MN Medical School & St. Paul-Ramsey Medical Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-22 Current Problems in Cardiovascular Diseases; Mayo Clinic/Mayo Foundation; Walt Disney World, Hotel Royal Plaza, Lake Buena Vista, FL; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

22-23 Pediatric Update for Primary Care Physicians; Univ. of MN Medical School and St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

23-March 2 Office Management of Common Orthopaedic Problems; Minnesota Medical Association and Minnesota Orthopaedic Society; Sheraton World, Orlando, FL; CONTACT: Eugenia C. Kassar, Director, CME & Meeting Services, MMA, 612/378-1875.

MARCH, 1985

Advanced Clinical EMG; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

6-9 Third Annual Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

22 Emotional Trauma in Emergency Medicine; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

28-30 Cardiopulmonary Medicine Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

APRIL, 1985

11-12 Third Annual OB/GYN Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-19 Pediatric Days; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

19-20 8th Annual Clinical Update in Practical Cardiology; Abbot-Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985; American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

26-27 Ophthalmic Reviews — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

3 ENT in Primary Care; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

6-10 Practice of Internal Medicine — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

18-21 Impact of Modern Perinatal Care on Society, 15th Annual Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, Mpls., MN 55455, 612/373-5718.

AUGUST, 1985

1-4 Second Annual St. Paul-Ramsey Trauma Conference; St. Paul-Ramsey Medical Center; Fox Hills Resort, Mishicot, WI; CONTACT: Ruth K. McIntyre, 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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(Continued from page 658)

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(Continued from page 657)

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

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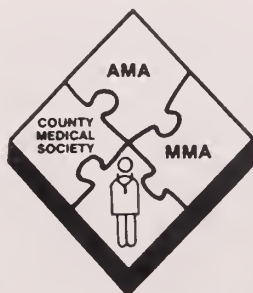
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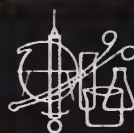
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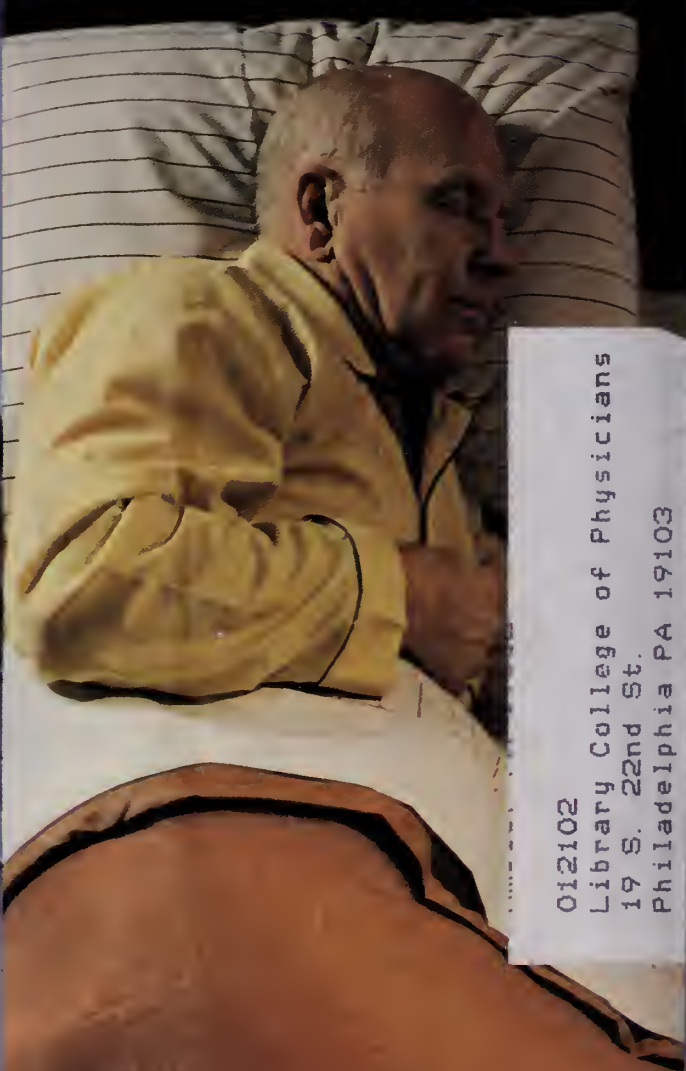
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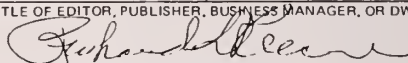
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2. DATE OF FILING 9-30-84		
3. FREQUENCY OF ISSUE monthly	3A. NO. OF ISSUES PUBLISHED ANNUALLY 12	3B. ANNUAL SUBSCRIPTION PRICE \$18.00 \$20.00 foreign and Canadian
4. COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION (Street, City, County, State and ZIP+4 Code) (Not printers) 2221 University Avenue SE, #400, Minneapolis, Hennepin, Minnesota 55414		
5. COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OF GENERAL BUSINESS OFFICES OF THE PUBLISHER (Not printer) 2221 University Avenue SE, #400, Minneapolis, Minnesota 55414		
6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, EDITOR, AND MANAGING EDITOR (This item MUST NOT be blank)		
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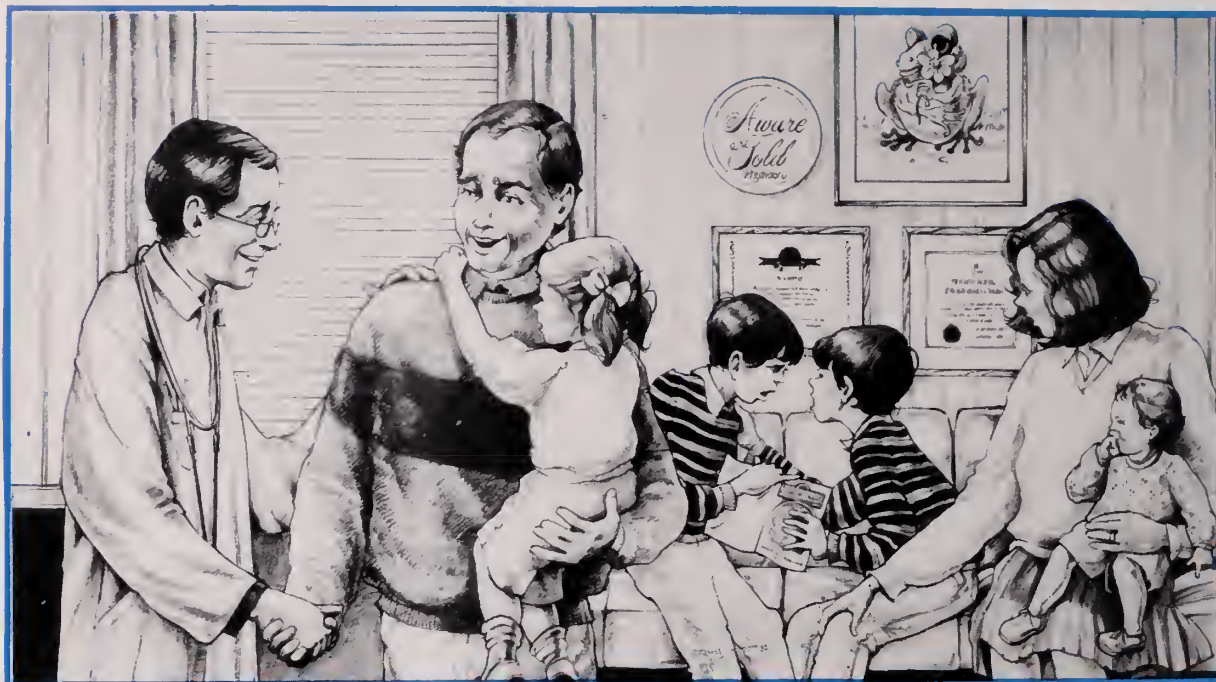
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Annual Subscription — \$18.00. Single copies — \$2.00
Canadian — \$30.00. Foreign — \$30.00.

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President's Letter



Sharpen Your Skills — Contract Renewal is Here

As the year ends the annual health care plan contract renewal blitz hits. HMOs, hospitals, and insurance companies bombard our senses with words and images extolling the virtue of one health care plan or another.

This marketing blitz tends to push into memory recent experiences patients and physicians have had regarding termination of physicians from health care plans. These terminations resulted from contracts negotiated by physicians with health care plans.

The experiences of the physicians involved in these terminations point out the need for thorough contract analysis. I cannot overemphasize the importance of reading the contract, understanding the terms of the contract and comprehending the ramifications of entering into any legal agreement.

Market conditions currently existing in the health care delivery system are dictating that tough decisions be made by both health care plans and providers. The terms presented in these contracts are unprecedented.

In order to adapt to these competitive pressures, a sophisticated level of knowledge is required. Every physician needs to re-read the two-part series on exclusive dealing clauses in the October issue* and physician contracting in the November issue† of MINNESOTA MEDICINE.

If you or your staff have questions or doubts about contract specifics, help is available. The consulting network and legal services available through the Minnesota Medical Services Corporation are a valuable service available to members. Seek out experts to help plot the best course for your particular situation.

Remember, a contract is the result of negotiations. Physicians must understand the initial contract offered and then negotiate the terms of the contract prior to signing. Only when all issues are agreed upon should the physician enter into the contract. Physicians should know that their ultimate power in the marketplace is to refuse to sign the contract.

*Page 581.

†Page 647.

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
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Minnesota Society of Internal Medicine

Synopsis of Scientific Sessions

Saturday, April 14, 1984

Mayo Clinic, Rochester, Minnesota

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In this synopsis, I have attempted to re-create the challenging atmosphere that was present during the Scientific Sessions at the annual spring meeting of the Minnesota Society of Internal Medicine. Each abstract submitted was independently reviewed and graded by two internists, both practicing general internal medicine, and by me. Our aim was to have an appropriate mixture of both the common and the rare, and a major emphasis was placed on clinical relevance for the practicing physician. Of the abstracts submitted, only about 50% were selected for presentation.

Here, each abstract is reproduced as originally submitted (with minor modifications) and is followed by a condensed, edited version of the discussion that followed. Although perhaps not the same for the reader as actually being there, I hope that the scientific flavor of the meeting had been captured in this text.

The success of the meeting and the publication of this synopsis were truly a team effort. I wish to express appreciation to: Dr. Claus A. Pierach,

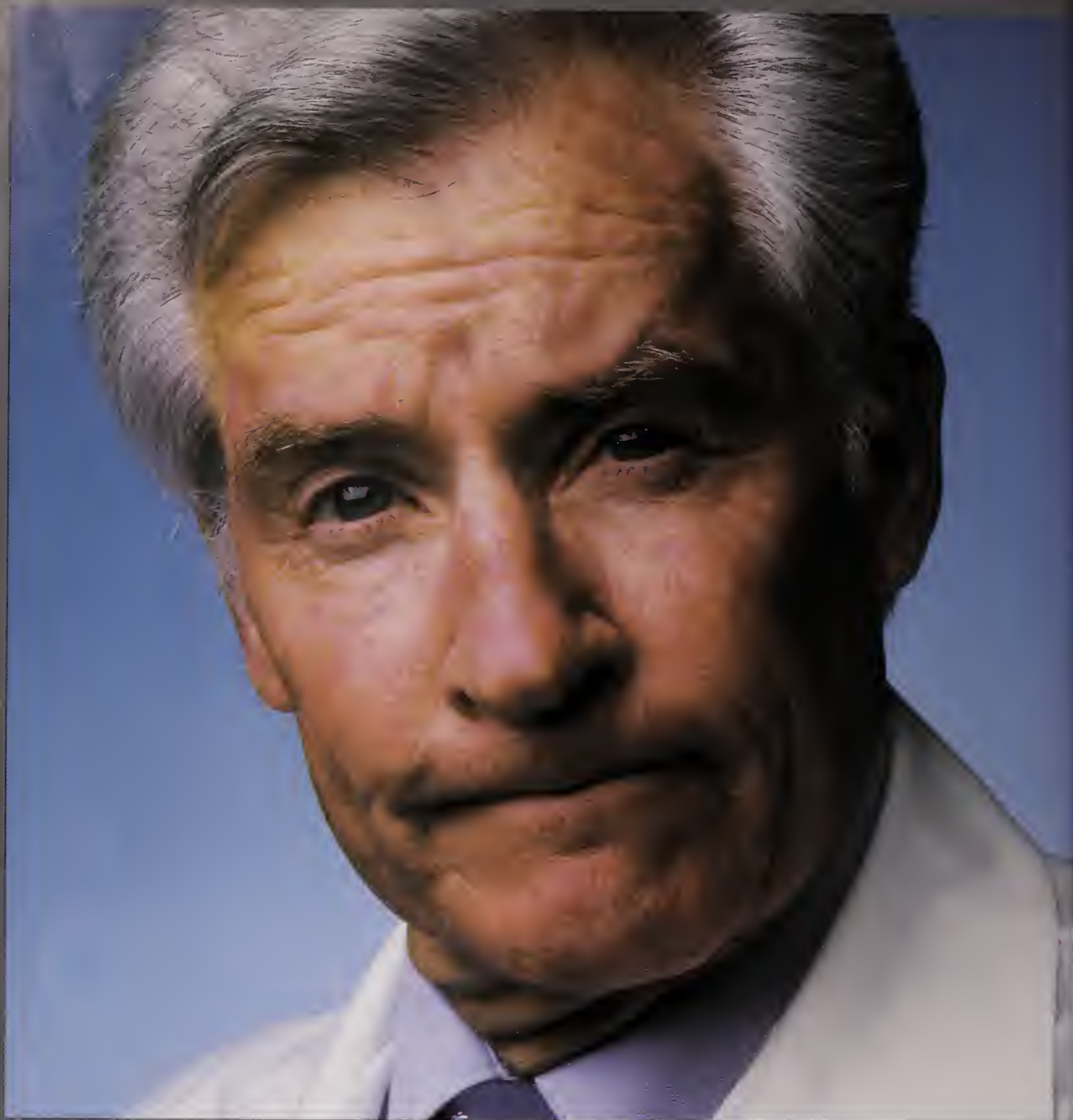
Secretary-Treasurer of the Society, for assisting with the numerous details of organization and arrangements of the meeting; Dr. Mahlon K. Burbank, past president of the Society, for his advice; Dr. Alvin L. Schultz, American College of Physicians Governor for the State of Minnesota, for helping to publicize the meeting; Mr. William L. Nietz and the Section of Continuing Education of the Mayo Clinic, for their administrative support; Mr. Lynn Ferschweiler, Mayo Clinic, for audiovisual support; and Ms. Lorri Konopisos, Mayo Clinic, who played a central role in helping to organize and arrange the meeting and the preparation of this manuscript.

One of the major aspirations of the Society is to foster continuing medical education for the internists of the state of Minnesota. I hope that the spring meeting of the Society and this synopsis accurately portray that spirit.

CLARENCE SHUB, M.D.
Program Chairman

1985 MMA Annual Meeting to be Held at the St. Paul Radisson

The Board approved a site change for the MMA Annual Meeting to be held May 8-10, 1985. MMA will meet at the St. Paul Radisson instead of the Radisson South in Bloomington.



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Fulminant Hepatitis

Mayo Clinic Experience with 34 Cases

JORGE RAKELA, M.D.,* JURGEN LUDWIG, M.D.,* WILLIAM P. BALDUS, M.D.*

During the period 1974-1982, 34 patients were hospitalized with fulminant hepatitis. Fifteen of them were males and 19 were females. The median age was 43 years (range, four months to 67 years). Two patients (6%) survived. The most prevalent cause was non-B hepatitis, occurring in 15 patients. Six patients had received potentially hepatotoxic drugs, (halothane in three and nitrofurantoin, diphenylhydantoin, and α -methyl dopa each in one). Two patients had been exposed to industrial poisons (a mixture of toluene and trichloroethylene in one and 2,4-dichlorophenoxyacetic acid in one). Three patients were diagnosed as having fulminant Wilson's disease. Six patients were found to be positive for hepatitis B surface antigen (HBsAg) at the time of their hepatitis. Finally, two were found to have herpes simplex hepatitis. The median interval between onset of symptoms and onset of encephalopathy in 30 patients was 20 days (range four to 60 days). The median interval between onset of encephalopathy and death in 31 patients was eight days (range one to 66 days). The two survivors were in coma for five to six days. Clinical complications were increased serum creatinine, upper gastrointestinal bleeding, sepsis, ascites, pancreatitis, adult respiratory distress syndrome, and seizures. A striking difference between our group of patients and other series previously described is the high fatality rate. A possible explanation for our results is the combination of older age of our patients and the predominance of HBsAg-negative hepatitis. Both features have been associated with a poor prognosis.

Comment

Dr. Albert J. Czaja:[†] Jorge, your analysis is really enlightening and very provocative. Certainly all of us at the Mayo Clinic who care for these patients are disturbed by this very high mortality rate. I have a few questions that relate to this concern. First, data from the Centers for Disease Control indicate that the frequency of acute viral hepatitis in the United States

has remained essentially stable over the last 30 years, although there has been an inexplicable decrease in the incidence of type A hepatitis in the United States and throughout the world. I was wondering if there was any change in the etiologic mix of your patients over the years of study?

Dr. Rakela: These 34 patients were seen in a 9-year period, an average of less than 4 per year, and so I could not see a trend. On a national basis there is a recent trend from a high frequency of fulminant type B disease toward non-A,non-B hepatitis although that trend could not be observed at Mayo because most of the cases were already non-A,non-B.

Dr. Czaja: This leads me to my second question. Certainly, data from your own experience with the Acute Liver Failure Study Group would indicate that patients with non-A,non-B hepatitis probably have a worse prognosis than do those with type B hepatitis in its fulminant phase. Do you feel that the non-A,non-B component of our experience accounts for this high mortality? Additionally, do you think that, in the future, the mortality from hepatitis will actually increase if indeed the frequency of type A hepatitis decreases on a national basis, if immunization programs for hepatitis B infection are broadened, and if, in a sense, non-A,non-B hepatitis infection is thus increased?

Dr. Rakela: Yes. The survival rate for non-A,non-B fulminant hepatitis on a national basis is around 12% and for type B hepatitis it is 33%. If that trend continues (i.e., a lower incidence of type B fulminant disease, possibly because there is less drug abuse) toward more frequent non-A,non-B hepatitis, I think the fatality rate on a national basis will become closer to what we have observed. I have talked about non-B hepatitis because only three of the patients developed the disease after serologic testing was available for type-A. The rest of the patients had their condition before we had an acute phase marker for type A hepatitis. But I presume that most of them were non-A,non-B, as has been the case in other series, and that would account in part for the poor prognosis in these patients.

*Division of Gastroenterology and Internal Medicine and Section of Medical Pathology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

[†]Division of Gastroenterology and Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

Dr. Czaja: Survival seems to be better in individuals with a drug-induced or toxin-induced fulminant hepatic failure rather than virus-induced disease. Presumably this is due to the fact that the exposure to the toxic agent or drug can be terminated abruptly and the mechanisms that perpetuate the liver injury, therefore, can be limited and regenerative activity can occur. What was the fate of the eight patients with the drug-induced or toxin-induced liver failure? Did they survive longer than those with virus-induced disease?

Dr. Rakela: None of these eight survived. But when we reviewed these eight cases, however, there were several interesting factors. Two of the three patients with halothane-induced liver toxicity had been exposed to halothane twice. One of these two had had a cholecystectomy complicated by postoperative fever (interpreted as a possible subphrenic abscess) and underwent surgical exploration of the abdomen (halothane anesthesia). No subphrenic abscess was found. Liver biopsy showed massive hepatic necrosis, and then the patient was transferred to our institution. The second patient had undergone gynecologic surgery and subsequently developed jaundice and fever. Abdominal ultrasound examination showed gallstones. The patient was diagnosed as having acute cholecystitis. At operation, there was no evidence of acute

cholecystitis but rather fulminant hepatitis was diagnosed. The rest of the patients received potentially hepatotoxic drugs until jaundice occurred. We must continually be aware of the potential for drug-induced acute hepatitis in our patients. If the medication is stopped early in the course of their hepatitis, the outcome may be better. If the patient continues taking the drug, however, the outcome is poor.

Dr. Czaja: Can I just ask one other question of you? How can we improve these statistics? What specifically should we be doing differently? Do you think the hemoperfusion technique has promise in this regard? What about liver transplantation in these patients?

Dr. Rakela: The patients in this series have been included in two national trials evaluating hepatitis B immune globulin and hydrocortisone as forms of treatment. Both have been shown to be ineffective in acute fulminant hepatitis. We are now using post-dilution hemofiltration as a form of artificial liver support system based on the experience from Europe and Japan that shows that this might improve the survival of these patients. With regard to the role of liver transplantation in this disease, a few patients have undergone transplantation. All of them have died.

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
2. Not engaged in an academic capacity.
3. Has made outstanding contributions to the Medical School, the University, the Alumni, and the community.
4. Has had a relatively long experience in the field of medical science or a related field.

Nominations for the 1985 awards should be sent immediately to:

Konald A. Prem, M.D., Chairman,
Harold A. Diehl Award Committee
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Minneapolis, Minnesota 55455 (612) 373-7635

Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

Review of Benign Paroxysmal Positional Vertigo

DAVID N. MOHR, M.D.*

Although paroxysmal positional vertigo is one of the most common types of vertigo, differences in definition and subtle differences in patient presentation combine to make the diagnosis of "benign paroxysmal positional vertigo" difficult for many physicians. When vertigo occurs only with changes in head position and is associated with a direction-fixed fatiguing nystagmus that has a latency of onset and is of brief duration, the diagnosis can safely be made. A number of different positional maneuvers have been described to precipitate this nystagmus. When nystagmus does occur, its direction may be of importance in definition of the syndrome. Electronystagmography is of little benefit in making the diagnosis. This syndrome is unlikely to be associated with central neurologic disorders but is often associated with head injury and peripheral vestibular disorders. Several different pathologic mechanisms have been described. Except when symptoms are of sufficient severity to require division of the vestibular portion of cranial nerve VIII, the therapy is nonspecific. Habituation training may be helpful therapeutically.

Comment

Dr. Clarence Shub:† Have you seen patients who have positional vertigo without nystagmus? Would you comment on that, and what you think that means?

Dr. Mohr: I certainly have. If you try to fit a patient into a group that has *all* the diagnostic criteria, it will be hard to ever make a definitive diagnosis. When a patient presents with a history of positional vertigo yet in response to the head-hanging maneuvers exhibits vertigo with no nystagmus, I still think that a presumptive diagnosis of benign positional vertigo can be made tentatively. If you bring such patients back during recurrence of symptoms, you might pick up another 20% who have the characteristic nystagmus at a later date.

Dr. Henry J. Schultz:‡ It seems to me that most patients that come to us with this condition are pretty well convinced that they have either a brain tumor or

stroke by the time they come in, and from the material presented, 2% actually will have a brain tumor. Up to this point, I have been reassuring them that this was *always* a benign condition. Are there any clinical clues? Specifically, does the neurologic examination give normal results in those individuals who have more serious central nervous system pathology?

Dr. Mohr: In two studies that showed a 2-3% incidence of brain tumor presenting as "benign positional vertigo," only one patient (of a total of six) had no associated neurologic findings or any other clinical clues. In addition, I am aware of three or four more cases in the literature (as isolated case reports). So there are not many cases in the literature in which the patient actually had a brain tumor with no other clues. I think this situation is somewhat akin to "head-ache." You have to make the decision sometimes to treat these people empirically on clinical grounds and follow them for a period of time before you decide to initiate a major, expensive diagnostic evaluation.

Dr. Stephen L. Hadley:§ Do these patients ever have true syncope? Do they ever have a true syncopal spell associated with their vertigo?

Dr. Mohr: Syncope is not part of the typical syndrome, although occasionally when a person has a severe vertiginous episode, a vasovagal response could be associated and cause confusion in terms of symptoms. However, light-headedness, or graying of vision, as opposed to the hallucination of movement that a patient would classically report when describing the symptoms associated with benign paroxysmal positional vertigo, implies decreased cerebral perfusion rather than true vertigo. Thus, syncope is not part of the syndrome.

Dr. Shub: I personally have found that the various drugs that have been on the market for the treatment of the "dizzy patient" provide no consistent therapeutic benefit. Is there any role for drug therapy?

Dr. Mohr: The studies that have looked at this in a controlled fashion have found that the benzodiazepine tranquilizers are of no benefit. The other drugs that inhibit vestibular function, such as meclizine, do inhibit the response to vestibular stimulation but do not consistently relieve the symptoms, so drug therapy is really of no benefit.

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‡Division of Community Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

§Rheumatologist, Duluth Clinic, Duluth, Minnesota.



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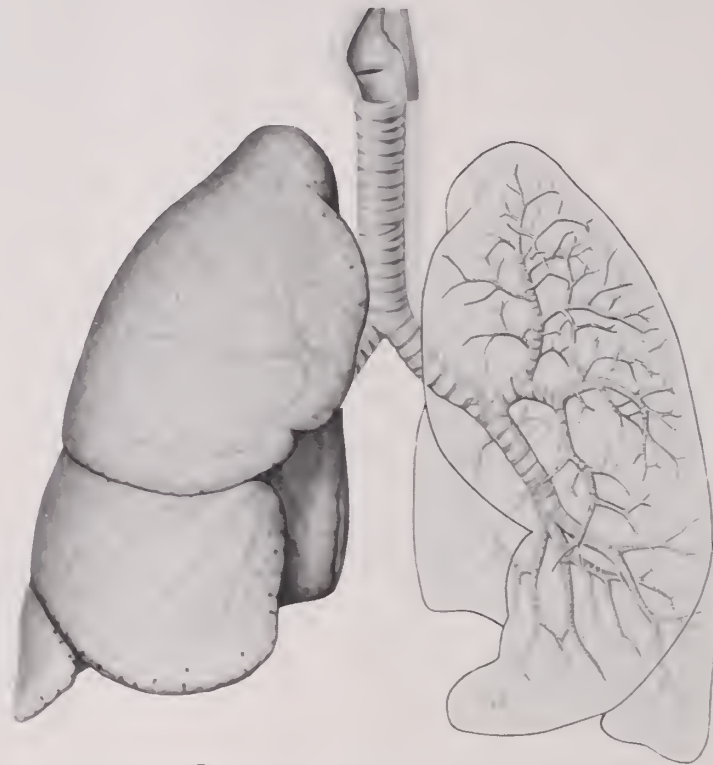
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Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics including macrolides, semisynthetic penicillins, and cephalosporins; therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, manage-

ment should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

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Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum

human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cecilor[®] (cefactor, Lilly). There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Cecilor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Cecilor is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions Adverse effects considered related to therapy with Cecilor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 10).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (syndrome) have been reported in children and adults. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Cecilor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have

occurred in patients with a history of penicillin allergy. Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations in SGPT or alkaline phosphatase values (1 in 40).

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

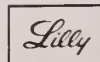
Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

(061782R)

Note: Cecilor[®] (cefactor, Lilly) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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83-844

Theophylline Toxicity

JAMES B. WARREN, M.D., * SAMUEL W. HALL, M.D., * R. KINGSTON, M.D.*

Theophylline preparations are widely prescribed and used extensively in the hospital setting. Toxic reactions to theophylline preparations are well known and include anorexia, nausea, vomiting, irritability, hypotension, cardiac arrhythmias, and intractable seizure activity. Seizures are frequently associated with residual neurologic deficit and a 50% mortality rate.

The occurrence of severe toxicity can be anticipated but not accurately predicted from plasma theophylline concentrations. Optimal management strategy for patients with theophylline toxicity, beyond general supportive care, is not well established. Therapeutic approaches include the oral administration of repeated doses of charcoal. Another strategy is the use of hemoperfusion with resin or activated charcoal cartridges. Although hemoperfusion is very effective in decreasing plasma theophylline concentrations, the procedure is expensive and is associated with risks including hypotension hypocalcemia, the thrombocytopenia.

We report a case of severe theophylline toxicity (plasma concentration 87.5 µg/ml) treated by charcoal hemoperfusion because of cardiac and neurologic toxicity. In addition to reviewing the clinical course of this patient, we describe our previous experience with charcoal hemoperfusion in the therapy of theophylline toxicity and present management strategies for the patient with severe theophylline toxicity.

Comment

Dr. H. Michael Marsh:‡ I want to congratulate Dr. Warren for a very good presentation made at a most appropriate moment in the program, since we are going for a methylxanthine (coffee) break very shortly. I do have one or two questions.

Studies of the pharmacokinetics of theophylline suggest a two-compartment model — protein binding occurring in the plasma (the first compartment) and then gradual dispersion to the tissues (the second compartment). Do you have serum albumin values in your patient and could you comment on what you think that mechanism might be whereby a single loading dose increased the plasma level so dramatically and for such a prolonged period of time?

Dr. Warren: Theophylline levels appear to be dose-dependent. There is evidence that, with increasing doses, the situation actually shifts to a dose-dependent model in which the half-life becomes markedly prolonged. The patient was on erythromycin which has been shown to decrease metabolism of theophylline. Second, she was elderly. Third, she may have had decreased hepatic blood flow. We do have serum albumin levels but I have not yet correlated them with theophylline levels.

Dr. Marsh: I wonder then whether charcoal hemoperfusion or albumin infusion would be most helpful in lowering the level of available drug in the vascular space in cases like this. The second question is related to other drug interactions. In acutely ill patients in our hospitals, one “automatic” reaction is start “prophylactic” cimetidine therapy immediately, regardless of other drug therapy. We have seen a number of patients in the last 12 months with seizures associated with theophylline toxicity that had been attributed in part to this drug interaction. Could you comment on the mechanism?

Dr. Warren: In terms of drug metabolism, theophylline fortunately is metabolized by the hepatic P-448 system and not by the usual P-450 system. Theophylline metabolism is activated by hydrocarbons, which is why smokers require a higher dose of theophylline to maintain a therapeutic level. So, in one regard, it is fortunate that we do not have quite as many drug interactions as with many of the other drugs that are metabolized by the standard P-450 microsomal enzyme system.

Dr. David N. Mohr:† I have had the experience of using oral charcoal therapy in patients with theophylline toxicity with prompt lowering of serum levels. Are there any studies similar to those available for acetaminophen, with a half-life chart that can be used to estimate the slope of serum decay and estimate when a “safe” serum level is present? This might influence the decision as whether or not to proceed with hemoperfusion.

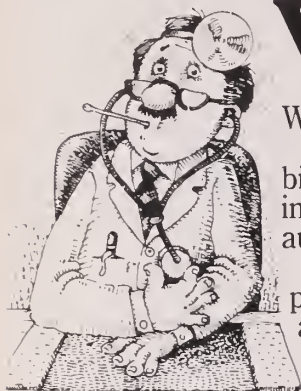
Dr. Warren: Unfortunately, I do not believe that there is such a chart. There are some vagaries in theophylline metabolism, unlike acetaminophen, which make predictions difficult. I am hoping that repeated oral charcoal administration will be the way to go. One can give it either by nasogastric tube or, if the patient is awake and not vomiting, by mouth.

*Department of Internal Medicine, St. Paul-Ramsey Medical Center, St. Paul, Minnesota and University of Minnesota, Minneapolis, Minnesota.

‡Critical Care Service, Department of Anesthesiology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

†Division of Area Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

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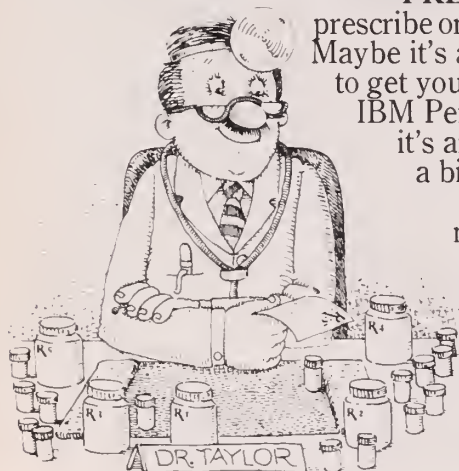
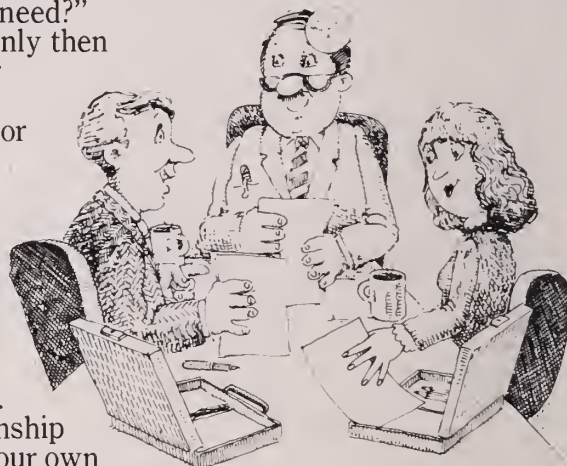
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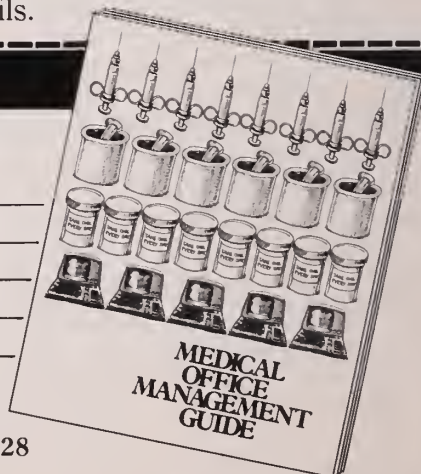
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*Cardizem is indicated in the treatment of angina pectoris due to coronary artery spasm and in the management of chronic stable angina (classic effort-associated angina) in patients who cannot tolerate therapy with beta-blockers and/or nitrates or who remain symptomatic despite adequate doses of these agents.

References:

1. Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. *Am J Cardiol* 49:560-566, 1982.
2. Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. *Chest* 78 (July suppl):234-238, 1980.

Reduces angina attack frequency*
42% to 46% decrease reported in multicenter study¹

Increases exercise tolerance*
In Bruce exercise test,² control patients averaged 8.0 minutes to onset of pain; Cardizem patients averaged 9.8 minutes ($P < .005$).

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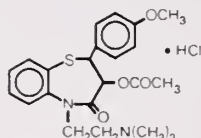
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DESCRIPTION

CARDIZEM (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)-one-3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-monohydrochloride, (+)-*cis*-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. **Angina Due to Coronary Artery Spasm:** CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. **Exertional Angina:** CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect: cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given: a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM

is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).

2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance. There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for D.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS AND ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in *in vitro* bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%),

headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.1%), asthenia (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of presentation corresponding to the relative frequency of occurrence:

Cardiovascular:	Flushing, arrhythmia, hypotension, bradycardia, palpitations, congestive heart failure, syncope.
Nervous System:	Paresthesia, nervousness, somnolence, tremor, insomnia, hallucinations, and anxiety.
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vomiting, mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensitivity.
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episodic vasospastic angina developed periods of transient asymptomatic asystole approximately five hours after receiving a single 60 mg dose of CARDIZEM.

The following postmarketing events have been reported infrequently in patients receiving CARDIZEM: erythema multiforme, Koppenia, and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limited. Single oral doses of 300 mg of CARDIZEM have been well tolerated by healthy volunteers. In the event of overdosage or exaggerated response, appropriate supportive measures should be employed in addition to gastric lavage. The following measures may be considered:

Bradycardia	Administer atropine (D.60 to 1.0 mg). If there is no response to vagal blockade, administer isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed high-degree AV block should be treated with digitalis.
Cardiac Failure	Administer inotropic agents (isoproterenol, dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levorotary bitartrate).

Actual treatment and dosage should depend on the severity of clinical situation and the judgment and experience of the treating physician.

The oral LD₅₀'s in mice and rats range from 415 to 740 mg/kg and from 560 to 810 mg/kg, respectively. The intravenous LD₅₀'s in these species were 60 and 38 mg/kg, respectively. The oral LD₅₀ is considered to be in excess of 50 mg/kg, while lethality seen in monkeys at 360 mg/kg. The toxic dose in man is not known but blood levels in excess of 800 ng/ml have not been associated with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient's needs. Starting with 30 mg four times daily, before meals or bedtime, dosage should be increased gradually (given in divided doses three or four times daily) at one- to two-day intervals until optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage appears to be 180 to 240 mg/day. There are no available data concerning dosage requirements in patients with impaired renal or hepatic function. If the drug must be used in such patients, titration should be carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be administered with short- and long-acting nitrates, but I have been no controlled studies to evaluate the antian anginal effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (NDC 0088-1771-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1771-49). Each green tablet is engraved with MARIDN or side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1772-49). Each yellow tablet is engraved with MARIDN on one side and 1772 on the other. Issued 4.

Another patient benefit product from



Is Libman-Sacks Endocarditis an Immune Complex Disease?

AZAM U. ANSARI, M.D.,* HENRY BATES, Ph.D.,* PAUL H. LARSON, M.D.*

In 1924, Emanuel Libman and Benjamin Sacks first described a form of endocarditis with atypical nonbacterial verrucous vegetations in four patients with a multisystem disorder. Later, Gross and others linked this entity to systemic lupus erythematosus (SLE). The pathogenesis of this lesion remains unclear. Because SLE is an autoimmune disorder, it occurred to us that perhaps this endocarditis and its verrucous vegetation are due to immune complex deposition.

In order to find the answer to the above question, four patients with long-standing SLE (duration of symptoms, 10-20 years) were followed from 1972 until the present. The diagnosis at initiation of the study was established on the basis of multiple system disorder, elevated sedimentation rate, positive FANA, and positive LE cell test.

Recurrent pericarditis, pericardial effusion and hypertension were the most common symptoms, occurring in 75% of patients. One patient who had had symptoms of SLE for 20 years developed mitral insufficiency in the first year of follow-up and Libman-Sacks endocarditis was considered the most probable underlying cause. This patient died suddenly. Limited autopsy confirmed the diagnosis. We performed immunofluorescent studies utilizing anti-IgG serum and complement labeled with fluorescein isothiocyanate. Intense immunofluorescence (4+) was found in the mitral valve stroma as well as in the atypical verrucous vegetation. It is suggested that Libman-Sacks endocarditis is another manifestation of immune complex deposition in patients with SLE.

Comments

Dr. Harvinder S. Luthra:† I would like to congratulate you on a very nice presentation. I have a few questions in regard to whether or not we are indeed looking at immune complexes. On one of your slides showing valvulitis, the appearance seemed to be a "linear" pattern. Was it "linear," or were you look-

ing at a "lumpy-bumpy" pattern?

Dr. Ansari: On that particular spot of the capillary there was a "linear" stain; however, if you look at the entire mitral valve, there is evidence of both dense and granular immunofluorescence, indicating a "lumpy-bumpy" pattern.

Dr. Luthra: You mentioned that you had controls. What were the results in these?

Dr. Ansari: They were nonreactive. Both anti-human albumin and antifibrinogen were negative in the control sections. IgA and IgM antibodies were also negative. Only IgG was positive.

Dr. Luthra: Did you do any studies on the serum of these patients to see if they had circulating immune complexes at that time?

Dr. Ansari: No, we did not.

Dr. Luthra: You also made a comment that you sometimes see IgE staining in those areas. I have a little difficulty in understanding how those immunoglobulins would be playing any role because they are not complement binding and they do not bind to the DNA which is the usual complex that you worry about in SLE.

Dr. Ansari: That information was taken from Bidani et al. (Immunopathology of Cardiac Lesions in Fatal Systemic Lupus Erythematosus, *American Journal of Medicine*, vol 69; pages 849-858, 1980) who reported evidence of IgE deposition around the epicardial nerve fibers. They were not able to give an explanation of this selectivity. They indicated that IgE activates an alternative pathway of complement activation (Spiegelberg HL, Biological Activities of Immunoglobulins of Different Classes and Subclasses, *Advances in Immunology*, vol 19, pages 259-263, 1974).

Dr. Luthra: I want to point out that some of the original studies in SLE, looking at the deposition of immune complexes in the kidney and in the arachnoid plexus, were the types of studies that Dr. Ansari has presented today, so I would hope that further studies along these lines would be very revealing.

Dr. Ansari: I agree. It is now known that in lupus dermatitis, nephritis, and choroid plexitis, as well as

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†Division of Rheumatology and Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

in pulmonary vasculitis, immune complex deposition occurs, and it was our hypothesis that perhaps Libman-Sacks endocarditis results from the same process. We disagree with the prior observation that these vegetations are a combination of fibrin and platelets. We think that fibrin and platelet deposition follows immune complex deposition. Our hypothesis

is that, initially, there is endothelial damage of the valve, which allows immune complex deposition which in turn excites the complement cascade. This process leads to further immune complex deposition and thereby a vicious cycle is established. Later, fibrosis takes place, leading to dysfunction of the valve affected.

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Pneumomediastinum: Pitfalls in Diagnosis and Management

STEPHEN L. KOPECKY, M.D.*

A 77-year-old white woman without history of lung or heart disease presented at the emergency room with a two-day history of shortness of breath, dry cough, and sore throat. On physical examination, the patient had scattered wheezes but was afebrile; the chest radiograph was normal, and arterial blood gas values showed mild hypoxia and hypocarbia. The patient was released (with a diagnosis of bronchitis), but she returned 12 hours later with increased dyspnea and complained of some retching. Results of physical examination were unchanged, but a chest radiograph showed pneumomediastinum and pneumoperitoneum. Her respiratory status deteriorated over the next few hours, and she suffered a respiratory arrest 4 hours later. Because of concern that there might be a Boerhaave tear, a Gastrografin swallow was done followed by esophagogastroduodenoscopy, bronchoscopy, and an exploratory laparotomy; all were negative for perforation. The patient became febrile, developed progressive pulmonary edema, and died on day four after admission. Neither physical examinations while she was alive nor autopsy showed evidence of peritoneal infection, and there was no cause found for the pneumoperitoneum other than the pneumomediastinum.

Comment

Dr. Henry J. Schultz:† I think this is a dramatic case. I have had a special interest in this disease ever since I missed a case as an intern. Subsequently I have seen this disease in asthmatics or people who are vomiting or a young man who is lifting. In the case presented today, what was most impressive to me was the paucity of mediastinal air on the chest radiograph compared to the severity of the symptoms and the rapid deterioration and demise. Is there anything from hemodynamic monitoring that would give you a clue as to the pathogenesis? It is clear that the physicians taking care of her were also impressed that her clinical

response was out of proportion to the small amount of mediastinal air present. Can this degree of pneumopericardium cause a picture of pericardial tamponade?

Dr. Kopecky: This patient had a very high pulmonary wedge pressure, but right-sided heart pressures initially were not increased. Very quickly, though, the hemodynamics changed, and right-sided pressures became increased. In retrospect, there is no good data in the literature to the effect that this is a common finding. It is interesting that the patient did not have much air anteriorly. Most of the mediastinal air was posterior, so we could not see much of it on the chest radiograph. Possibly, this caused selective left ventricular compression.

Dr. David N. Mohr:§ I wonder if the low arterial pH might have been a clue to hypoperfusion. The pH appeared to be lower than one would expect for the degree of CO₂ retention observed. I wonder if lactic acidosis was occurring and that might have been a clue to the severe nature of the pneumomediastinum?

Dr. Kopecky: She did indeed have a metabolic acidosis, but this was initially attributed to causes other than hypoperfusion.

Dr. W. Mark Brutinel:‡ One of the things that puzzles me is the degree of vascular compromise. The problem that I have with this being major vascular compromise secondary to pressure in the mediastinum is that she was also leaking air into the peritoneum ("pressure relief" mechanism). I wonder if this could have been a viral syndrome in a patient who, during a coughing paroxysm, ruptured a pulmonary bleb which then let air back into her mediastinum with subsequent development of acute respiratory distress syndrome. I guess the high left-sided ("wedge") pressure argues against that. In her initial presentation, were there any peritoneal signs?

Dr. Kopecky: No. Her abdomen was normal throughout, despite the pneumoperitoneum.

Dr. Brutinel: It has been reported that in cases of spontaneous pneumomediastinum in which pneumoperitoneum develops without peritoneal signs, observation rather than laparotomy is indicated.

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Dr. David R. Sanderson#: Clearly, the clinical concern was that she had a perforated viscus and I guess it is difficult now to look back and consider all of the factors that led to laparotomy but, as you look at the whole picture, do you think that the operation might have contributed to her demise. With general anesthesia, she must have had positive-pressure venti-

lation and this has the potential for increasing the amount of air that might be leaking into the mediastinum.

Dr. Kopecky: That is very true. All the findings you saw on chest radiograph were prior to intubation and prior to operation. The positive-pressure ventilation could have exacerbated the condition.

#Division of Thoracic Diseases and Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

The American Academy of Allergy & Immunology

The American Academy of Allergy and Immunology is seeking the assistance of all interested and concerned physicians in a new project concerning deaths which are suspected to be from insect sting allergy.

The Committee on Insects of the Academy has been an aid in determining the cause of death in suspected insect sting fatalities. They are measuring the antibody titers against bee, wasp, hornet, and yellow jacket using RAST technique on the serum of the patients who have died unexpectedly possibly following an insect sting. They would like to receive 10 cc serum from any patient with a suspected insect sting death. In addition to the serum, they would appreciate a short clinical history and if an autopsy is done, a copy of the autopsy report. They will return the laboratory reports to the coroners, pathologists, or physicians who send them to them. There will be no fee for this service.

Please obtain the 10 cc serum as soon as possible after death and send to either of the physicians listed below.

Donald R. Hoffman, M.D.
Dept. of Pathology
East Carolina Univ. School of Medicine
Greenville, NC 27834

or

John W. Yunginger, M.D.
200 First Street SW
Rochester, MN 55901

Please note the time elapsed between the death and the time of serum collection. The clinical history may be included with the serum or sent to the chairman of the Hymenoptera Sting Fatality Committee.

Joel D. Teigland, M.D., P.C.
1212 Pleasant Suite 109
Des Moines, IA 50309

Please notify the pathologists in your local hospitals and your regional coroners of this study. Your help is much appreciated.

Howard J. Schwartz, M.D.
Chairman, Committee on Insects
American Academy of Allergy

Health Care of Indochinese Refugees*

PATRICIA F. WALKER, M.D.†

Since the end of the Vietnam War in April 1975, more than 650,000 refugees from Vietnam, Laos, and Cambodia have resettled in the United States. Of these, approximately 50% are Cambodian and 35% are Vietnamese; the remainder are Hmong and low-land Lao from Laos. Minnesota ranks seventh in the nation in this refugee population with 21,000 immigrants; 1,300 of these are in Rochester and 13,000 are in the Minneapolis-St. Paul area. The Centers for Disease Control screen all refugees in Southeast Asia with a physical examination, chest radiograph if more than two years old, and a VDRL test. Entry is excluded for those with active tuberculosis, infectious leprosy, venereal disease, or certain psychiatric disorders. Medical screening in the United States should include: history and physical examination; update on immunization status; tuberculosis screening—ages 0-21 years: PPD test (if positive, obtain chest radiograph), if more than 21 years old: PPD test and chest radiograph; laboratory testing (complete blood cell count, chemistry group, urinalysis, HBsAg, VDRL, and three stool examinations for ova and parasites); nutrition counselling; and psychologic support as needed.

Major disease entities that occur in this population include tuberculosis, malaria, parasitic infestations, hepatitis B carrier state, and hematologic and dermatologic abnormalities.

Tuberculosis is potentially a significant public health problem because of its infectivity and potential for reactivation. One to 2% of arriving refugees have active tuberculosis; pulmonary tuberculosis accounts for 90% of the cases seen. Fifty percent of refugees are positive to PPD in contrast to 7% of American patients. The PPD test should be interpreted regardless of BCG status because a positive reaction cannot distinguish infection from previous BCG vaccination. Fourteen percent of refugees in the United States are on isoniazid prophylaxis.

The case rate of malaria among refugees arriving in the United States in 1978 was 6.7 per 1,000; the infections were with *Plasmodium vivax* in 70% of cases, *P. falciparum* in 20%, *P. malariae* in 5%, and

mixed *P. vivax* and *P. falciparum* in 2%. *P. vivax* and *P. falciparum* infections rarely last longer than 2 years from the last exposure, whereas *P. malariae* infections can persist for more than 30 years in a latent stage.

Of the parasitic infestations, *Ascaris*, hookworm, *Giardia*, and *Trichuris trichiura* are the most common pathogens. In one series in which 426 refugees were tested, 82% had at least one parasite. Symptoms were absent in most but, when present, included abdominal pain, diarrhea, anorexia, and nausea.

Hepatitis B is very common in Southeast Asia; 12-13% of refugees are HBsAg-positive, and most are chronic, asymptomatic carriers. The carrier rate in the United States population is 0.3%. In one study, 21.4% of the patients had abnormal results on liver function tests. Infants born of HBsAg-positive mothers should receive hepatitis B immune globulin in the immediate neonatal period. Hepatoma, which has been associated with a history of hepatitis B infection, is also more common in Southeast Asia.

Hematologic abnormalities are very common and include relatively high incidences of glucose-6-phosphate dehydrogenase deficiency, α - and β -thalassemia, and hemoglobin E disease. Glucose-6-phosphate dehydrogenase deficiency can cause hemolysis with intercurrent infections and with drugs often used in this patient population, including sulfa drugs, dapsone, and certain antimalarials. In one study, 26% of the patients had minor dermatologic problems such as scabies, pediculosis, and superficial fungal infections. The case rate of leprosy in refugees is low: 1.4/1,000. Major psychiatric disorders are not more common in Southeast Asian patients than in Americans but, because of the intense psychologic stresses of war and famine and the major adjustment required with immigration to a foreign nation, many refugees experience transient psychiatric illnesses.

The Centers for Disease Control conclusions are as follows: 1) the majority of refugees will be free of major contagious disease; 2) when an illness is present, it will likely represent a personal rather than a public health problem; and 3) the main health problems, perhaps exceeded only by the stress of resettlement itself, will include tuberculosis and parasitic diseases.

*A detailed list of references will be provided upon request to the author.

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As with many other immigrants to the United States in the past, Southeast Asian refugees will assimilate well over time, enriching both our culture and our history in the process.

Comment

Dr. W. Mark Brutinel:* Does the Centers for Disease Control suggest that we be more aggressive in using isoniazid prophylaxis in PPD-positive persons over 35 years of age in this population?

Dr. Walker: The recommendations are that, if a PPD-positive patient is more than 35 years old and is in a household in which there is someone else with active tuberculosis, this patient should be treated with isoniazid. Also, this treatment should be given to high-risk patients — for example, someone who has silicosis, or is taking corticosteroids or other immunosuppressive agents, or is recovering from gastrectomy.

Dr. Brutinel: Those are the standard recommendations. Do they recommend that the physician should treat all PPD-positive persons from Southeast Asia who are over 35 or that we should use the same criteria as for the general United States population?

Dr. Walker: They would use the same criteria.

Dr. Brutinel: The other point I would like to make is that, because of the high incidence of resistance to isoniazid, a year of prophylactic therapy with it may not prevent future development of tuberculosis in this population.

Dr. Walker: I think that is a good point. About 8.5% of refugees are resistant to isoniazid. This drug is

available over-the-counter in Southeast Asia so it tends to be used liberally. I agree that, after treating patients with it for prophylaxis, we should keep in mind the fact that it may not always be effective in tuberculosis prevention.

Dr. Eugene C. Rich:† I have had the experience of trying to figure out what to do with a Vietnamese patient with a positive PPD test. When Vietnam was a French colony, BCG vaccine was used but predominantly in the higher socioeconomic classes. Do you know the percentage of people coming from Vietnam who have had the BCG vaccine?

Dr. Walker: Between 30% and 50% of patients from Vietnam have had BCG vaccination. The Centers for Disease Control think that, especially after a year, you should interpret the PPD test independently of BCG status and that if the BCG status were to have any effect on the PPD response (dermal reaction) it probably would only cause a doubtful (i.e., 5 to 9 mm) response. So the PPD test should be interpreted without regard for BCG status.

Dr. Jorge Rakela:‡ The main mechanism of transmission of hepatitis B virus in that population is perinatal, after acute viral hepatitis. Is hepatitis B vaccine being used right now to prevent perinatal transmission among refugees?

Dr. Walker: Not that I am aware of. There was an interesting report in *JAMA* in 1976 discussing the situation in which Vietnamese orphans had been adopted by Americans and then other family members developed hepatitis B via nonparenteral transmission. I am not aware of any specific program to treat prophylactically for neonatal hepatitis.

Dr. Conrad J. Wilkowsky:# There is such a program. Newborns are given hepatitis B immune globulin and started on Heptavax immunization routinely at this institution and that is the recommendation of the Centers for Disease Control at the present time.

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Alcohol-Related Acute Atrial Fibrillation

EUGENE C. RICH, M.D.,* CONSTANCE M. SIEBOLD R.N.,† and BRIAN C. CAMPION, M.D.‡

Heavy alcohol (EtOH) use has been suspected to cause acute atrial fibrillation, but an association between these two relatively common medical problems has never been demonstrated. We used predetermined criteria to select 64 patients with idiopathic acute atrial fibrillation (IAAF) retrospectively from among 1,386 consecutive hospital admissions for atrial fibrillation. History of alcohol use, physical examination and laboratory findings, treatment response, and subsequent course were determined by medical record review. Sixty-four age- and sex-matched controls were randomly selected from among hospital admissions to the general medicine service, and these medical records were reviewed for history of EtOH use.

Sixty-two percent of the cases of IAAF and 33% of controls had documentation as heavy users of EtOH ($P < 0.01$). Patients with IAAF and heavy EtOH use were preponderantly male, as were the controls with heavy EtOH use. Patients with EtOH-related IAAF were not different from other patients with IAAF with respect to clinical evidence of congestive heart failure, electrocardiographic changes, cardiomegaly, electrolyte disturbances, or response to therapy. Furthermore, the EtOH-related arrhythmias were not associated with "holidays." Manifestations of EtOH withdrawal were significantly ($P < 0.05$) more common, however, in patients with EtOH-related IAAF (26%) than in other hospitalized patients with heavy EtOH use (5%).

IAAF is significantly associated with heavy EtOH use in our hospital, supporting the hypothesis of an EtOH-related acute atrial fibrillation. EtOH withdrawal may represent a particular risk factor in these patients.

Comment

Dr. Clarence Shub:‡ Did you notice any differences in the therapeutic responses in these patients in regard to β -adrenergic blockers, digitalis, etc?

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Dr. Rich: That is a very good question, and we did look at the types of treatment and the response. The numbers were small, of course. There was really no difference in the number of patients who received either digoxin or propranolol, nor was there a difference between the heavy EtOH users and the nonheavy users in terms of the frequency of spontaneous cardioversion or the need for electrocardioversion.

Dr. Shub: My second question deals with the method of separating "heavy" from "nonheavy" EtOH users. How did you choose the cut-off point? Did you choose it prior to your assessment? And did you account for the fact that there can be variable uptake and hepatic metabolism of EtOH and therefore variable effects on the heart?

Dr. Rich: That is an excellent point. Prior to data collection, we establish criteria for defining EtOH use and we also looked to see whether varying the amount of EtOH intake would reveal a clear break point. There was a group of patients who used a lot less and a group who used a lot more, so the criteria we used seemed to hold up and make sense. The criteria of 70 ml of EtOH intake per day (six drinks per day) has been used in other studies. It is arbitrary, of course, and it does not meet DSM III criteria for EtOH abuse or dependency, and so for that reason we simply called it "heavy" EtOH use.

Dr. John A. Spittell, Jr.:# Did you check the tobacco use by your patients? The reason I bring that up is because recently, with the ease of using chewing tobacco in little packets, I have seen a couple of people who have fibrillated early in the morning with the first packet, and I wonder if any of your patients were chewing tobacco?

Dr. Rich: That is a very interesting question. Of course, it is known that there is a relationship between excessive use of EtOH and smoking. We did not record data regarding smoking and analyze separately for that, nor did we collect any data regarding the noninhaled use of tobacco. My subjective impression is that the use of chewing tobacco in urban centers like Minneapolis and St. Paul seems to have gone up since 1980, but our patients were studied prior to that time.

Dr. Azam U. Ansari:§ Just two brief comments. You referred in your presentation to phosphate-related cardiomyopathy. I just wanted to let you know that one paper that once was very popular has been withdrawn and it is questionable if hypophosphatemic

§Department of Cardiology, Metropolitan Medical Center, Minneapolis, Minnesota.

cardiomyopathy exists. Second, have you done any electrophysiologic studies in these patients who had repeated atrial fibrillation when they became intoxicated?

Dr. Rich: This was a retrospective study; we did not study them electrophysiologically.

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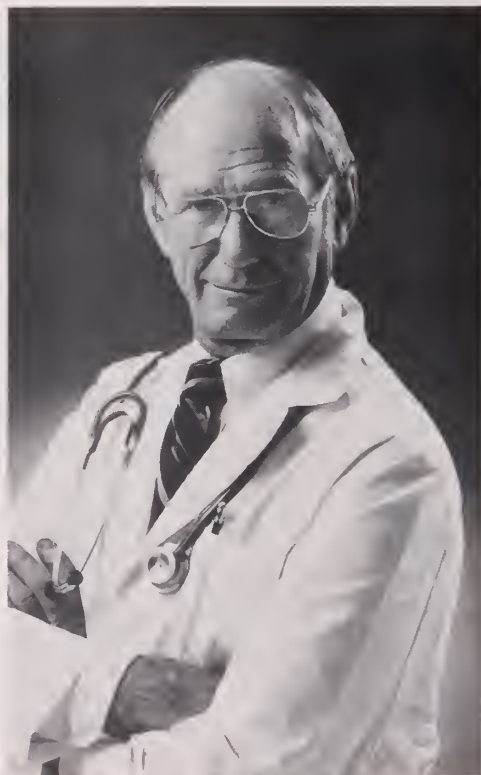
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Lack of Relationship between Pernicious Anemia and Stomach Cancer

NEIL R. HOFFMAN, M.D. *

Previous studies have indicated an increased incidence of stomach cancer (SC) in patients with pernicious anemia (PA). This increased incidence rate varies from 2 to 18 times higher than that in the normal population. Current statistics show a decrease in the incidence rates for SC but not for PA. With this decreased incidence, reevaluation of this reported association between PA and SC was felt to be indicated. In 1970 we reported on 81 patients with PA who were followed for an average of 10.7 years. SC was not observed in any of these patients. Subsequently, 152 different patients with documented PA were followed for an average of 14.2 years, and none of these 152 patients developed SC during this time. In addition, 45 consecutive patients with biopsy-proven SC were evaluated to see if PA had been previously diagnosed. These patients were followed until death (mean follow-up, 9.1 months) as well as for an average of 4.2 years prior to the diagnosis of SC. None of these 45 patients had a diagnosis of PA. The only anemia noted in these patients was associated with blood loss and generally was microcytic and hypochromic. These results are in contrast to the previously reported studies suggesting that PA is a risk factor for development of SC. Our data suggest that patients with PA are not at greater risk for SC. Several explanations are possible. 1. Previous studies indicating PA as a possible premalignant disease may be in error, because these were reported prior to accurate diagnostic methods. 2. The diagnosis of PA was generally made as a late finding. 3. Earlier diagnosis and effective treatment of PA may reduce or eliminate the effect of an acquired carcinogen on gastric mucosa. 4. There is a parallel but nonrelated decrease in the incidence of SC in the general population and in patients with PA.

Comments

Dr. David E. Larson:† First, I would like to thank Dr. Hoffman for what I think is a very timely presentation. I have a comment and then a couple of questions. It has been suggested (based on some of the papers that you have alluded to from Minnesota and

also from Europe) that patients who have PA should be screened endoscopically beginning 10 years after the initial diagnosis and continuing on a yearly basis. No account is taken of the enormous cost of this kind of screening. So I think you are getting at questions that are important in terms of cost containment, cost-benefit ratio, and prospective payments. The criticisms of the earlier studies relate to the nature of the population studied — that is, the risk in those with PA compared to a control group. Also, the spontaneous occurrence rate of SC (which may be declining) has not been taken into account. My questions are: (1) What is the definition of the population that you used? Is it a local population or is this a referral population? (2) Did you take into account the risk of stomach cancer occurring naturally in this same population with age- and sex-matched controls? (3) What was the follow-up?

Dr. Hoffman: The study population consisted of patients who were brought to a large community hospital in Minneapolis or to the county hospital. These patients were primarily in a middle to older age group and were not necessarily referral patients at that time. Currently, the County Medical Center is getting more referral patients, but these were more indigent patients from Minneapolis. The Metropolitan Medical Center did have a referral base, but I cannot state the ratio. The ages of the population were about the same. In terms of the naturally occurring SC rates in this population, there has been a decreased rate of SC. We do not know why. Perhaps it is because of the way we preserve our meats and foods. There are certain countries that have very high incidences of SC. One is Japan which, incidentally, has a very low incidence of PA. It is difficult to follow patients with SC, at least in Minneapolis, very long because they just do not seem to live for prolonged periods of time. We are not picking up early SC. But in Japan, where they are doing endoscopy in a relatively large number of asymptomatic patients and where they do pick up early SC, PA has not occurred in this population, to my knowledge. The initial series that I showed from 1960 to 1968 was followed mainly by upper GI studies, etc. The latter series, from 1975 to 1980, was followed by endoscopy if there were any symptoms at

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all. The patients with SC who died all had autopsies.

Dr. David M. Craig:[‡] Were the studies that showed the higher incidence of SC in PA done in the days before the use of cyanocobalamin? Has any consideration been given to the possible influence of this?

Dr. Hoffman: First, previous studies demonstrated a macrocytic anemia in patients developing SC. The incidence of SC was higher then, but the diagnosis of PA was not well defined because we did not have the means to diagnose this disease accurately. I think that

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many of these macrocytic anemias would not be diagnosed as PA today. In fact, when we had the means to do this, we found that essentially no patient with SC had PA and we are not sure why. We would expect that one or two patients with PA whom we did follow for an average of 14 years would develop SC. But they did not. Treatment now is much different. The hemoglobin concentration that we currently find in PA can be 12 or 13 g/dl. The Coulter Counter indicates a macrocytic anemia, we take a look at the smear, and we get a diagnosis quickly. We hardly see a hemoglobin value of 2 or 3 g/dl any more.

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Respiratory Failure in a 32-Year-Old Farmer Due to Nitrous Dioxide Exposure

NINA SCHWENK, M.D. *

A 32-year-old, nonsmoking, white farmer was admitted to the hospital on Oct. 1, 1983, in respiratory failure. He had been well until 12 hours prior to admission, at which time he was exposed to a blast of brown, pungent gas as he opened a compartment of his corn silo. After a 10-minute period of unconsciousness and continued exposure to the gas, he was found and brought to medical attention. At that time he was asymptomatic and results of examination were normal, so he was sent home. Ten hours later he became dyspneic and febrile to 38.9°C and returned for medical evaluation. Diffuse rhonchi were audible on chest auscultation, and a chest radiograph showed bilateral alveolar infiltrates. He was hospitalized and within 24 hours required intubation for progressive respiratory failure. Because the clinical picture was consistent with silo-filler's disease, he was treated with high-dose corticosteroids and supportive care. He gradually improved over a five-day period with clearing of his lungs on examination and chest radiograph. Reevaluation at two and eight weeks showed no evidence of clinical disease, including normal chest radiograph and normal results of pulmonary function studies.

This case is an example of pulmonary injury after inhalation of the irritant gas nitrous dioxide (silo-filler's disease). The clinical presentation of this patient — including an initial asymptomatic period and subsequent alveolar exudation and respiratory insufficiency — is typical. Although silo-filler's disease is seen infrequently now because of increased

awareness by farmers of the dangers of silage fumes, it remains a potential hazard and should be of particular interest to Minnesota physicians. Nitrous dioxide tends to cause destruction of small airways and alveoli whereas other gases (i.e., sulfur dioxide) affect primarily the upper airways. Treatment is mainly supportive, and the role of corticosteroids remains controversial.

Comment

Dr. W. Mark Brutinel:† This is a very nice summary. This is a preventable disease, as you pointed out, and is well-known among the farming community. It is in their publications, and farm organizations stress these points. Yet, there still are individuals who develop this disease. Also, you probably should not rule out the possibility of silo-filler's disease for at least 6 weeks after the silage is put in. If the ventilation inside the silo is not adequate, the gas can remain for a long time, and it can also occur at the base of the silo, especially in still air conditions. Nitrogen dioxide gas is heavier than air and will sink to the bottom of the silo and diffuse out around the base. It was initially noticed that farm animals would die at the base of these silos. This is the reason that most farmers fence areas around their silos to keep animals away.

Dr. Schwenk: Most of the farmers around here really are knowledgeable about this problem. This particular patient has had various other difficulties in the past. He has frequently fallen out of the silo and has had several brain concussions. I think he was aware of the problem but unfortunately went up and opened the silo early despite the fact that he knew what was going on.

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†Division of Thoracic Diseases and Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

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NAME Syndrome (Nevi, Atrial Myxoma, Myxoid Neurofibroma, Ephelides): A New and Unrecognized Subset of Patients with Cardiac Myxoma

HUMBERTO J. VIDAILLET, JR., M.D.,* JAMES B. SEWARD, M.D.,† EARL FYKE III, M.D.,† A. JAMIL TAJIK, M.D.†

NAME syndrome (nevi, atrial myxoma, myxoid neurofibroma, and ephelides) is rare. This presentation reports three such cases from the Mayo Clinic and reviews a total of 13 cases gleaned from the world's literature. We compare the clinical features of the 16 NAME syndrome patients with 63 consecutive Mayo Clinic patients with "sporadic" cardiac myxomas. Special emphasis was placed on the extent of associated features. Comparative features (NAME vs. sporadic cardiac myxoma) included: young age (mean and range, 24 years and 3-46 vs. 56 years and 39-82 years); equal sex distribution (male/female, 1:1 vs. 1:3.8); atypical cardiac myxoma (unusual attachment, 75% vs. 21%; multiple, 63% vs. 2%; recurrent, 19% vs. 0%); excessive cutaneous freckling (31% vs. 0%); extracardiac myxoid tumors (63% vs. 3%), and familial myxomas (19% vs. 0%). Other associated features included distinctive red-brown hair (31% vs. 0%), multiple nevi (25% vs. 0%), and tumors of the adrenal (three patients), breast (two patients), and testes (one patient). Notable is the fact that all of these features were found in a significantly lower incidence in the 63 patients with sporadic cardiac myxomas. In our total series of 66 Mayo Clinic patients, 3 patients (5%) had NAME syndrome. The true incidence is unknown; however, it may be more common than heretofore appreciated. The NAME syndrome appears to have multiple clinical features that allow the clinician to differentiate these individuals from patients with sporadic cardiac myxoma. The acronym NAME does not accommodate the multiplicity of findings or complexity of this syndrome. We report an important clinical subset of patients with significant medical, surgical, and possibly genetic implications.

Comment

Dr. Emilio R. Giuliani:† First, I compliment Dr.

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Vidaillet on his excellent presentation. Second, I think the important message in this paper is to remind us that in some patients skin abnormalities may be giving us the first clue to an underlying disease process. In this case, lentigines gave us a clue to an underlying cardiac defect. I would suggest that it is important to differentiate freckles from lentigines and that it usually can be done clinically. Lentigines are present at birth or soon after. Freckles appear at age 5 or later. Lentigines appear over the entire body independent of exposure to the sun, in contrast to freckles that are present almost exclusively on exposed areas. Finally, in contrast to lentigines, when exposed to the sun freckles increase in number and become much darker. If you have any doubt, then I think a biopsy and histological examination would confirm whether or not the lesion is a freckle or a lentigo. Since many patients have both, the dermatologist must choose his site carefully. If a diagnosis of lentigines is made, then you should think of possible associated cardiac abnormalities. The most common is hypertrophic cardiomyopathy. Other associated cardiac defects include pulmonary stenosis, abnormalities in the electrocardiogram, and cardiac myxomas. Lentigines have been reported, and we have seen this, to occur also with coarctation of the aorta, aortic valve stenosis, atrial septal defect, and mitral valve prolapse. The majority of patients that we see with lentigines, however, do not have any cardiac abnormality.

Dr. Shub: You mentioned that a clear-cut separation (of lentigines versus freckles) is frequently possible. Are there cases in which the differentiation is not so clear-cut and, if so, could you tell us about your experience with that?

Dr. Giuliani: In medicine, there is always a spectrum and therefore there will be cases that fall in between, making diagnosis difficult. I think there is a distinct separation between the patient with lentigines and freckles. Cardiac defects are definitely associated with lentigines and not with freckles.

Dr. Vidaillet: The patient that I presented today is

described in the dermatology files at the Mayo Clinic as having central facial lentiginosis. Her skin biopsies, interpreted by multiple dermatologists in this institution, are called freckles. Dr. Atherton's review of lentiginosis includes both pictures and skin biopsies of the patients. Dr. Atherton had a dermatologist evaluate the photographs and skin biopsies, and he called them freckles. So, unfortunately, it is not always clear. Our impression at this point is that many of these patients have both. One of the objections we

had was use of the term "atrial myxoma" because, of the patients with this syndrome, seven had ventricular myxomas.

Dr. Giuliani: A better title for your paper might be "Lentiginosis and Cardiac Myxomas: Additional Observations." Many of the observations have been made in the past, and several acronyms have already been applied. What we want to avoid is adding confusion to the literature by offering new names to previously described syndromes.

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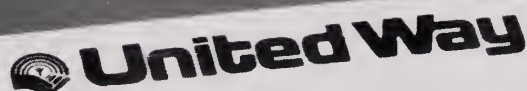
Cover Photograph

"Frosty Morning"

Dr. Paul M. Schollmeier, family practitioner with the Blue Earth Medical Center in Blue Earth, took the cover photograph while skiing with his family in the Boundary Waters. He used a Canon-AE-1 Program camera with Kodachrome 25 film with a shutter speed of 1/1,000. It was an extremely bright morning, but Dr. Schollmeier was able to record the beauty of the area with his camera.

Dr. Schollmeier is a fisherman, photographer, and stamp collector; in fact, Dr. Schollmeier tells the editors he likes to collect most anything.

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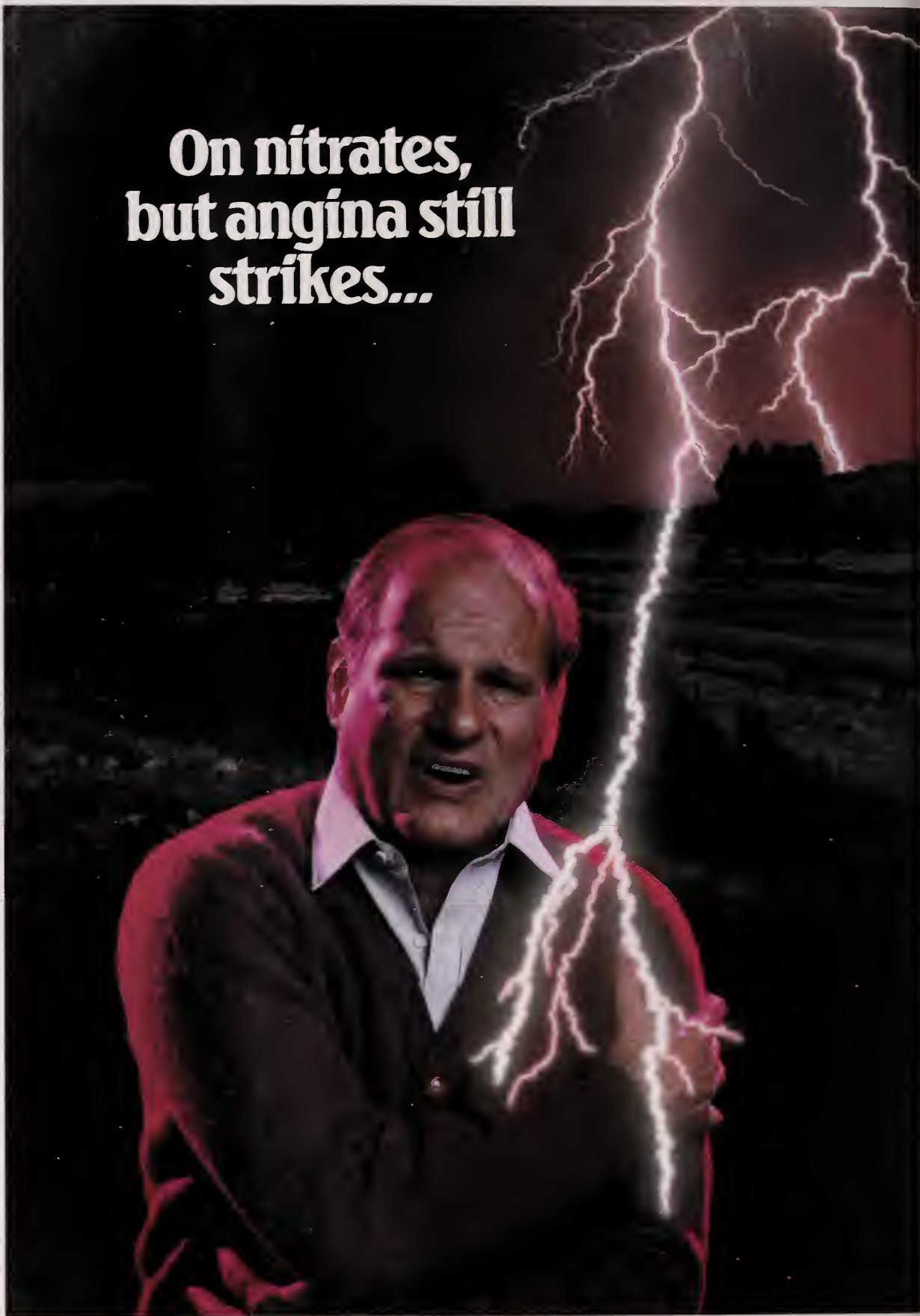
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Another Case of Back Pain

RUTH ELOUISE JOHNSON, M.D.*

A 78-year-old man was admitted to the hospital for evaluation of low back and bilateral leg pain. Five years prior to admission, a grade 2 adenocarcinoma of the prostate had been discovered on transurethral prostate resection. Treatment was a pelvic lymphadenectomy (all nodes were negative for metastases) and radiation therapy. Complications of the radiotherapy included radiation cystitis and radiation proctitis; partial sigmoid colectomy and sigmoid colostomy had been performed in 1979. His back and leg pain were of recent onset, and the cause was unclear.

On physical examination, the patient was in obvious discomfort from the bilateral leg and low back pain. There was no pain to direct percussion over the spine, nor was pain elicited by straight leg raising or active rotation of the hip joints. A thorough neurologic evaluation failed to reveal any neurologic deficit.

Laboratory evaluation showed normal hemoglobin value, leukocyte and platelet counts, and erythrocyte sedimentation rate. Serum sodium, potassium, calcium, total protein, and creatinine values, liver function test results, and protein electrophoresis pattern all were normal. Acid phosphatase was minimally increased with normal tartrate inhibition. Radiographs of the spinal column revealed collapse of L4, and a radioisotope bone scan showed abnormal uptake in the L4 region only. Tomography of the L4 disc space revealed only destruction of the L4 vertebral body, and a computed tomography scan of the pelvis demonstrated only radiation changes. An electromyogram revealed an old left L4-5 radiculopathy.

Biopsy of the L4 vertebra revealed plasma cell infiltrates consistent with a plasmacytoma. A metastatic bone survey did not reveal any additional bony lesions, but biopsy of a bone marrow aspirate was diagnostic of multiple myeloma.

Comment

Dr. Philip R. Greipp:† There certainly were several possibilities for pitfalls in this patient's diagnosis. This patient had no monoclonal protein identified in

the serum or urine on immunoelectrophoresis. This occurs in a very small percentage of myeloma patients (less than 1%) in our experience. Also, this patient had had irradiation of the pelvis and this caused a hazard in interpreting the biopsy at that site. Failure to find myeloma in that area could have been misleading. In general, the three major criteria that are needed for making the diagnosis of myeloma are: (1) a monoclonal protein in the serum or urine, (2) bone lesions or osteoporosis, and (3) a sufficient number of atypical plasma cells in the bone marrow.

As Dr. Johnson pointed out, about a quarter of patients will have no abnormalities on standard serum protein electrophoresis, and I think that is a very important point. Thus, if you do suspect myeloma, immunoelectrophoresis may be necessary. About a third of patients will not have bone abnormalities detected on the radiograph and, in these patients, sometimes tomography, particularly in the cervical region or localized rib views, or computed tomography of vertebrae will be helpful in demonstrating lytic lesions when standard bone radiographs do not. Occasionally, one will see a patient who fulfills all criteria for the diagnosis of myeloma. Such patients may have "smoldering myeloma" and remain stable for years without treatment.

Dr. John A. Spittell, Jr.:‡ I cannot help but wonder about the cost of the work-up. I think we all have to face this. I wonder how necessary it is to go right to a skeletal survey. I do not believe that that is inexpensive. The same applies to a bone scan in a patient who is more than 60 and has back pain, anemia, and a high sedimentation rate. Would it not be more economical to do the special protein studies and the bone marrow biopsy? Is all that work-up necessary to diagnose myeloma and manage it?

Dr. Greipp: I think the diagnosis of multiple myeloma has to be firm before treatment is initiated because of the cost of treatment economically, physically, and emotionally. The work-up must be efficient and expeditious in order to minimize hospital stay. Negative studies or atypical results are frequent enough that the diagnosis rests not on any one of these tests but on the combination. In addition, the tests serve as important baselines for further treatment decisions.

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‡Division of Cardiovascular and Internal Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

Dr. Robert B. Howard:# That comment presumes that there is a benefit from early treatment. Has that been proven?

Dr. Greipp: That certainly is an excellent point. Most of these patients, of course, are symptomatic when they are seen, and there is benefit from early treatment of the symptomatic patient. We cannot cure this disease, but we can provide palliation for these patients and get them back to work. Our management goal is to keep these patients active and prevent the disability from the disease. I have just this week seen a patient for evaluation of back pain at age 37 years.

This patient's back pain was present for 2 years and, in the course of the work-up, a serum protein electrophoresis was done. A monoclonal protein was found in the serum and, although the radiographs of the back were negative, the skull radiograph showed multiple myeloma and tomograms showed a locally destructive lesion. In this instance, "early" diagnosis was important. I think we all have seen instances of so-called neglected multiple myeloma; these patients may get into a lot of trouble with renal insufficiency and disability from their bone disease if appropriate treatment is delayed.

#Department of Medicine, Abbott-Northwestern Hospital, Minneapolis, Minnesota.

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Takayasu's Arteritis: A Diagnostic Challenge

KEN C. ARAKAWA, M.D.*

A 20-year-old white woman was admitted in August 1983 for evaluation of an abnormal aortic arch angiogram. In July 1982 the patient had experienced acute onset of polyarthritis (right knee, left elbow and wrist, and metacarpophalangeal and metatarsophalangeal joints). The initial diagnosis was rheumatoid arthritis. Over the next year, she was treated with aspirin, aurothioglucose (Solganal), hydroxychloroquine (Plaquenil), nonsteroid anti-inflammatory agents, and low doses of prednisone — all without significant relief of symptoms. On monthly follow-up visits it was noted that her blood pressure was unobtainable. In July 1983, a syncopal episode occurred while she was bending over. Over the next 1½ months, she had "graying out" spells, tunnel vision, and arm and jaw claudication more frequently. In August, an aortic arch angiogram was made and was compatible with "aortic arch syndrome." She was treated with prednisone (60 mg daily).

On examination by us, the blood pressure in her legs was 140/80 mm Hg; it was not obtainable in her arms. The pulse rate was 76/min. She was afebrile. Other pulses (R/L) were: carotid, 0/0; axillary, 0/0; brachial, 0/0; radial, 0/0; ulnar, 0/0; aorta 4; femoral, 3/3; popliteal, 3/3; dorsalis pedis, 2/2; posterior tibial, 3/3. Systolic and diastolic bruits were heard over both carotid and both subclavian arteries. The total leukocyte count was 7,000/ μ l with a normal differential. Other relevant data were: hemoglobin, 11.5 g/dl; platelet count, 490,000/ μ l; erythrocyte sedimentation rate, 33 mm in 1 hr; serum creatinine, 0.9

mg/dl; serum antinuclear antibody titer, 1:80; rheumatoid factor, negative.

The final diagnosis was Takayasu's arteritis, a rare giant cell arteritis affecting mainly the aortic arch and its major branches. This entity no longer can be considered a disease entity affecting only Oriental women. Its diagnosis can be difficult and misleading, especially in the "pre-pulseless" phase when treatment may be of greatest benefit.

Comment

Dr. John W. Joyce:† Our surgical colleagues have amply documented that technically complex operations can be accomplished in these patients with significant benefit at a low risk, about 6%. These patients obviously are "burned-out" cases and not the kind that Dr. Arakawa has just described. My comments would center on those cases with active inflammatory disease. We are currently following six such patients on a regular basis, and only one is burned out and has had successful surgical treatment. The other five have these characteristics: ongoing need for corticosteroids (60 to 100 mg of prednisone per day initially), all have experienced recrudescence at some phase during tapering on several occasions, and a few, who have undergone operation in the inflammatory phase, have had their grafts close. It is clear that patients in the inflammatory stage can require steroids for 6-10 years; either a better steroid protocol or ancillary agents in addition to steroids are needed. In visiting with staff members of the National Institutes of Health, I learned that the use of cyclophosphamide (Cytoxan) is being considered. However, these patients predominantly are young women, and the effect of this drug on the ovaries must be respected. We are considering the use of ancillary azathioprine (Imuran) in selected patients.

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Book Review

Medical Casebook of Doctor Arthur Conan Doyle: From Practitioner to Sherlock Holmes and Beyond
Alvin E. Rodin, M.D. & Jack D. Key, Robert E. Krieger Publishing Co., Inc., Melbourne, FL 32901 1984.

Sherlock Holmes may be the most widely recognized character in all of fictional (sic) literature. Since his first appearance in the late nineteenth century, various media presentations of the Master Detective have brought his image to the minds of virtually every person in the English speaking world and those in many other lands. Less well recognized, however, is the fact that Mr. Holmes' creator was a practicing general physician for approximately ten years in late Victorian England. This omission has been well remedied by the recent publication of the *Medical Casebook of Dr. Arthur Conan Doyle*.

The thesis of authors Rodin & Key is that Arthur Conan Doyle, while well remembered for his classical contribution of Holmes and Watson to detective literature, his varied literary works and catholic interests in British society, was a moderately successful general practitioner in Southsea (Portsmouth) England during the 1880's, and he *did not* leave medicine because he was "a failure." Unfortunately, several past biographical works about Doyle have tended to downplay his medical success and sophistication, and correction of this error was the genesis of the *Medical Casebook*.

In 1982, Dr. Rodin published a shorter work, the *Journal of the Quest of the Elusive Dr. Arthur Conan Doyle*, which documented his literary journey throughout England researching Conan Doyle's early life, especially the area and extent of his medical practice. From this fascinating personal effort, Rodin & Key have now developed a most interesting and remarkably detailed and researched description of Conan Doyle's medical experiences beginning with his student days at the University of Edinburgh to his general practice in Southsea and his very brief experience as an ophthalmological consultant in London. They have researched and documented many of the primary sources of information about Doyle which were often lacking in the previous biographies. Their personal experiences and discussions with well known Doyle scholars in Scotland, England, and the United States have illuminated several less well appreciated aspects of Conan Doyle's medical practice.

In addition to the historical description of Conan Doyle's medical life, including the fact that Doyle was a pupil of well known surgeons Joseph Lister and Joseph Bell (the model for Sherlock Holmes), the

authors have introduced the reader to interesting aspects of Doyle through some unusual documents such as his medical school report card, his M.D. thesis on *Tabes Dorsalis*, his medical experiences in the Boar War, and, of course, his numerous literary works, mainly those derived from his personal experiences and those of detective fiction, all of which give insight into the medical thinking of the 1880's and 1890's in England and Europe. Several of Conan Doyle's 57 written contributions to the British "medical" literature of that time are discussed in detail including his interests in macrophages, Daylight Savings Time, typhoid fever, gout, public health, the role of physicians as military officers, and such controversial subjects of the time as vivisection, compulsory vaccination, and the treatment of tuberculosis.

An example of the type of material uniquely presented in this book and previously lacking in other Doyle biographical works is the description of Doyle's interest in infectious disease, clearly well ahead of his contemporaries, especially in the area of smallpox vaccination and the treatment of tuberculosis. Doyle wrote much in support of the former, and regarding the latter, took a dramatic trip to visit Koch in Germany when his theory of tuberculosis was discussed. Even though Doyle was not able to speak with Koch, he immediately reviewed the situation and suggested that Koch's treatment of tuberculosis was not appropriate at that time, a conclusion later validated by scientific studies. Rodin & Key describe 39 Doyle references to infectious disease in the book's index!

In addition to new aspects of Doyle's life being revealed, one is impressed with the unique selection of photographs which are included in this book. On opening the end papers one looks directly into the main street of Southsea, England, in approximately the time of Doyle's practice, and his actual medical office is shown, bringing one into the spirit of nineteenth century England while reading about his medical experiences. The frontispiece is Doyle's own personal sketch of his life's work drawn near the end of his life which gives his input as to the relative values of his many endeavors.

Physicians especially will enjoy this book as it relates to their own experiences, albeit occurring over a half century later. One empathizes with Doyle's experiences as a medical student when vivid situations from his medical work *Round the Red Lamp* are discussed and his trials and tribulations on an Arctic whaler and an African passenger vessel at which time he contracted malaria. The experiences of beginning medical practice and physicians' relationships are

uniquely displayed in excerpts from *The Stark-Munro Letters*. Throughout the *Medical Casebook* one seems to be sitting on Doyle's shoulder and experiencing the excitement of Victorian medical practice.

Dr. Rodin and Mr. Key use their skill and experience in writing medical history to document Doyle's role in the medical milieu of that time. Considerable insight into contemporary medical thinking is revealed through Doyle and his works. One is introduced to the practice of medicine at that time through three sections about Doyle: his student and practitioner days, his medical and non-medical fiction, and of course, the writings concerning Sherlock Holmes known as "The Canon". Dr. Doyle's personal physicians and his own terminal illnesses are discussed. Several Appendices document the medical chronology of Dr. Arthur Conan Doyle, the 57 medical writings of Dr. Doyle, the University of Edinburgh Connection (faculty), the nearly 100 doctors mentioned in the works of Doyle, and the Canonical writings themselves which include eight tables listing interesting groups found in the Canonical works, namely, doctors, specialties, diseases, drugs and poisons, forensic science, violent death, Holmes and medicine, and medical miscellanea. Nine hundred and forty-seven references in addition to generous section notes complement the narrative.

The *Medical Casebook* reads like an adventure even though one is reading non-fiction, the true experiences of one of the most noted personalities of Victorian and Edwardian England. It will provide interesting reading for physicians and laymen alike, especially those interested in medical history and the formation and background of a writer of widely varied experiences. The medical reader will at times find himself amazed, puzzled, amused, excited, exhilarated, depressed, and relieved in reading such a fascinating history of a remarkable physician and author.

C. Paul Martin, M.D.
Norwegian Explorers of Minnesota
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Marshall, Minnesota

The Monograph — Morbid Obesity — John Linner, M.D., Springer Verlag Company.

"The Monograph, Morbid Obesity", written by John Linner fills a need for those interested in operations designed to reduce the weight of hyper-obese patients. In particular, it deals through its various chapters with the problems confronting the surgeon who elects to take care of these patients. The book is written in a very concise manner and it is not a difficult chore to read it from cover to cover. In doing so, those who feel well informed will notice the fine additional points that are valuable for a review of their own knowledge. The data presented by Dr. Linner and his colleagues is current and accurate.

The chapter on complications is particularly valuable and probably if carefully read and followed, would prevent a good number of problems that are seen after weight reduction surgery. The analysis of the uncertainty of results following gastroplasty operations stems from Dr. Linner's own experience. The vertical banded gastroplasty which he speaks of has not had a sufficient amount of time for its general acceptance. This is based on the previous experience of operations very similar to this.

All in all the book is excellent. It is beautifully illustrated. It covers the field very well. It is easy to read and it is recommended for those interested in this type of surgery. It should also be interesting reading for those who need to advise patients on whether or not to resort to surgical methods for weight reduction.

John F. Alden, M.D.
St. Paul, Minnesota

MMIE Malpractice Claim Review

Family Practice
MMIE Risk Management Committee
Frank E. Johnson, M.D.
Chairman

Allegations

Negligent prenatal care and delivery; negligent failure to consult an obstetrician.

Facts of Case

The patient, a 24-year-old woman, was seen by Dr. F on January 3rd for a routine pap smear. On examination, condyloma warts were found and treatment with Podophyllin was begun. The patient was next seen on March 14 and diagnosed as being three months pregnant. An EDC of September 2 was established. Pelvic measurements were recorded as "ok." On May 1, the patient showed a trace of albumin in her urine, but the rest of the examination was normal. Her next prenatal visit was June 27 when she had a recurrence of the condyloma warts; these were again treated with Podophyllin. On August 26, Dr. F documented the fundal height to be 30 centimeters. At this visit the patient again showed a trace of albumin and had marked ankle edema. Lasix was prescribed on a prn basis. On September 2, a fetogram was interpreted as showing the position of the fetus to be left occiput anterior. (However, following delivery of the baby, re-evaluation of the film revealed the actual position to be left occiput transverse). Dr. F again evaluated the fundal heights on September 8th and 18th and documented them in the record on both dates as 28 centimeters. (At his deposition taken after a lawsuit was instituted, Dr. F admitted that he had not actually measured the fundal heights, but had merely estimated them and that the measurements recorded were incorrect.) On September 18, Dr. F advised the patient to return in four or five days for a probable induction of labor if she had not spontaneously delivered before that time.

On September 22, the patient was admitted to the local hospital at 7:30 a.m. By history, her contractions had begun approximately at 4:00 a.m., occurring approximately every five minutes. At the time of her admission, she was dilated to three centimeters with intact membranes. Dr. F performed an amniotomy at 8:30 a.m. By 9:10 a.m., the fetal heart tones were recorded at 134. The labor record indicated a normal progression, although no documentation of station was ever made. At 1:10 p.m., di-

latation was seven centimeters with the same frequency and duration of contractions. Dr. F saw the patient at 1:15 p.m. At 1:30 p.m. she was dilated to nine centimeters and the fetal heart tones were recorded at 124; the patient was complaining of the urge to push. By 2:30 p.m., the fetal heart tones were 128, dilatation was complete, and the patient was transferred to the delivery room. There is no record of any monitoring of the mother or the fetus for the next three hours.

Depositions of Dr. F, the hospital nurses, the patient, and the patient's husband were contradictory as to whether or not Dr. F saw the patient in the delivery room prior to the actual time of delivery. No documentation was made of when Dr. F was notified that the patient had been transferred to the delivery room nor of the time or times he saw the patient. When Dr. F arrived for the delivery, he found a persistent occiput posterior fetal head position. He attempted to rotate the head to an occiput anterior position, but was unable to accomplish the rotation. He then elected to deliver the baby in an OP position and used outlet forceps to complete the delivery. A later progress note written by Dr. F described the delivery as "somewhat difficult, but not extremely so." A nurse testified at her deposition, however, that Dr. F was pulling "a long time and very hard" for the forceps delivery. The patient's husband testified that the forceps had slipped off once and that it looked like Dr. F was "pulling pretty hard." The delivery was completed at 5:31 p.m. and the baby was noted to be extremely limp, flaccid, and lethargic with labored, grunting respiration. No resuscitation efforts were documented. The infant was transferred to a perinatal care center at 7:00 p.m. where a diagnosis of severe central nervous system insult secondary to perinatal asphyxia was recorded. When a lawsuit was filed against Dr. F and the local hospital two years later, the child was described as seriously brain damaged, functioning at the level of a four to six month old, and exhibiting limited chance for improvement.

Disposition

Structured settlement with a potential payout of \$11 million given an estimated lifespan of 77 years for the infant.

Reasons for Settlement

The plaintiffs alleged that Dr. F was negligent in his prenatal care by failing to appropriately assess the adequacy of the patient's pelvis for vaginal delivery and failing to accurately determine the fetal size and position. They also alleged that Dr. F negligently failed to perform a timely caesarean section, failed to consult an obstetrician during the prolonged second stage of labor, and performed a negligent forceps delivery. Allegations of failure to administer appropriate resuscitation to the baby after delivery were also made against Dr. F and the hospital. Experts reviewing the case for the defense were unable to counter these allegations due to the lack of documentation of accurate pelvic measurements, fetal heart tones, fetal station, when Dr. F was contacted about the patient in labor, and when he arrived at the hospital for the delivery.

Risk Management Comment

Nationwide, the frequency and severity of malpractice claims involving birth-related injuries are increasing at dramatic rates. Common allegations in these cases include: negligent prenatal care, failure to obtain specialty consultation, inappropriate use of Pitocin, inadequate fetal monitoring, failure to perform a timely caesarean section and negligent forceps delivery. Frequently, the defense of these cases is seriously compromised by inadequate medical records. Particular problems have been caused by failure to document thorough patient histories, accurate pelvic measurements, deviations between size of the uterus and estimated dates, identified risk factors, and fetal heart tones taken at regular intervals throughout labor. Prenatal and labor and delivery records should clearly reflect that the physician has evaluated all pertinent factors, noted any deviations from normal, and responded in an appropriate and timely manner to all events during the patient's pregnancy, delivery, and postnatal periods.

October Case Review

The October case review* contained an incorrect reference to the position of a broken wire in the patient's acromioclavicular joint. The review omitted a clarification that the wire was lodged in the clavicle, but the surgeon's operative report was incorrectly dictated and stated the position on the wire to be in the sternum. We apologize for the confusion this created.

MMII

*Page 591.

Dependence on Nicotine Gum?

The University of Minnesota Medical School has been awarded a grant from the National Institute on Drug Abuse to study dependence on nicotine gum in ex-smokers. This grant will determine the prevalence of such dependence and whether it is physical or psychological in nature.

Physicians with patients who have used nicotine gum for at least one month can call the Primary Investigator, John R. Hughes, M.D. at 376-5198 to refer patients or to obtain further information. Self-referred patients will also be accepted. Patients will be invited to participate in one of several studies. In return for their participation, patients will receive free nicotine gum during the study (up to six months worth) plus free treatment to get off the gum (if you wish such treatment).

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For assistance with scheduling meetings, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program: Primary sponsor; Location; Contact person.

December 1984

6-8 Coronary Heart Disease: A Comprehensive Review of Principles and Practice; St. Paul-Ramsey Medical Center; Radisson Plaza, St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

February, 1985

4-8 Clinical Gastroenterology, 1985; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

4-9 Northwestern Med. Association-40th Annual Meeting; CME, Univ. of MN Medical School; Sun Valley, Idaho; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

8 Burn Care Update — 1985; St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-22 Current Problems in Cardiovascular Diseases; Mayo Clinic/Mayo Foundation; Walt Disney World, Hotel Royal Plaza, Lake Buena Vista, FL; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

22-23 Pediatric Update for Primary Care Physicians; Univ. of MN Medical School and St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

23-March 2 Office Management of Common Orthopaedic Problems; Minnesota Medical Association and Minnesota Orthopaedic Society; Sheraton World, Orlando, FL; CONTACT: Eugenia C. Kassar, Director, CME & Meeting Services, MMA, 612/378-1875.

MARCH, 1985

2-6 Advanced Clinical EMG; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

6-9 Third Annual Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

13-15 MAFP Spring Refresher-House of Delegates Meeting; MN Academy of Family Physicians; Radisson South Hotel, Bloomington; CONTACT: Chari Konerza, MAFP, 2221 University Ave. SE, Suite 426, Mpls., MN 55414; 612/623-9559.

22 Emotional Trauma in Emergency Medicine; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

28-30 Cardiopulmonary Medicine Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

APRIL, 1985

11-12 Third Annual OB/GYN Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-19 Pediatric Days; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

19-20 8th Annual Clinical Update in Practical Cardiology; Abbott Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985; American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

26-27 Ophthalmic Reviews — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

3 **ENT in Primary Care;** St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

6-10 **Practice of Internal Medicine — 1985;** Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

18-21 **Impact of Modern Perinatal Care on Society, 15th Annual Meeting;** Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, Mpls., MN 55455, 612/373-5718.

AUGUST, 1985

1-4 **Second Annual St. Paul-Ramsey Trauma Conference;** St. Paul-Ramsey Medical Center; Fox Hills Resort, Mishicot, WI; CONTACT: Ruth K. McIntyre, 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Minnesota Physicians who have access to microcomputers with MODEMS are encouraged to make use of the Minnesota Medical Conference Tree (MMCT). This is a free service operated by the Minnesota Medical Computing Consortium with a hardware grant from 3-M. The BAUD rate is 300, full duplex. Physicians may call the Minnesota Medical Conference Tree at 612-434-6315, there is no charge for the use of this service, which is menu driven and self-explanatory.

Donald L. Deye, M.D., President
Minnesota Medical Computing Consortium

Pediatric Days Mayo Clinic

Pediatric Days sponsored by the Mayo Clinic will be held April 18-19, 1985. The Amberg-Helmholz Lecture, a feature of Pediatric Days, will be given by Richard Goldbloom, M.D., Chairman of Pediatrics, Halifax, Nova Scotia. Presentations dealing with problems which occur in the practice of Pediatrics will be made by members of the staff of the Mayo Clinic. For information, write Robert H. Feldt, M.D., Program Director, Mayo Clinic, Rochester, Minnesota 55905.

Cover Slides for Minnesota Medicine

We are looking for winter and spring scenes for covers for MINNESOTA MEDICINE. Please send your vertical 35 mm slides to me at the Southdale Medical Center, Suite 225, Edina, MN 55435.

Bruce Nydahl, M.D.
Cover Editor

Interspecialty Council Highlights

Current Activities of the Interspecialty Council

November, 1984

A presentation concerning the newly revised X-Ray Operators Workshops was given to the members of the Council by Merle Mark, M.D., the MMA representative on the Committee.

The new workshop will combine a home study course with a clinical workshop. The course material will make use of a document published by the U.S. Government and produced by the armed forces for their radiologic technology training courses. The workshops are slated to begin in the spring of 1985 with seminar brochures mailed to physicians in January, 1985.

The purpose and goal of these continuing education seminars is to improve the quality of care provided to patients through safe radiology techniques. The newly designed and greatly improved seminar will offer continuing education to physician's office personnel who take Xrays. The seminars are sponsored by the MMA, the MN Academy of Family Physicians and the MN Chapter, Medical Assistants Association. John Benson, M.D., radiologist with Park Nicollet Medical Center, is Chairman of the Workshop Committee.

John Sutherland, M.D., Chairman of the MMA Communications Committee, shared with the Council the research used to create the public education program.

The goals of the PEP program are threefold. First, to position the physician in the view of the public as being first and foremost concerned about the patient. Second, to position the MMA as the voice in Minnesota for quality medical care and for credible facts

about the changing health care scene in the state. Third, to educate physicians about the importance of public relations and what each physician can contribute to improved public relations. The speaker's bureau brochure and medical guide for the media were distributed to the members as part of the new program.

Members of the twenty six specialties will be asked to participate in the program as each phase unfolds.

Kathleen Meyerle, chief lobbyist for the MMA, reported on the various issues which will be addressed during the 1985 Legislative Session. The issues included mandatory seatbelts, drinking age, professional liability and tort reform, allied health professionals, Medicaid reimbursement, smoking cessation, and increased cigarette taxes. Members of the Council shared their concerns regarding the issues of motorcycle helmets, physician contact programs, and peer review guidelines.

All specialties were encouraged to participate in the key contact program and to discuss their legislative concerns with the MMA staff.

The members of the Interspecialty Council participated in a long range planning exercise to assist that committee in charting the course of the MMA over the next five years. Two exercises were conducted to provide data to the Long Range Planning Committee on areas of concern to physicians and also to determine which areas have higher priorities than others. The Interspecialty Council is one of five groups of physicians to participate in this project in an attempt to guide the committee toward its goal.

*Director, Specialty Society Services and Assistant Director of Policy and Liaison, Minnesota Medical Association, Minneapolis.

Linda K. Lacher*

If you have any questions concerning the above, please contact your Interspecialty Council representative.

Interspecialty Council Representatives

MN Allergy Society
William Schoenwetter, M.D., 612/927-3091
MN Society of Anesthesiologists
Eldore B. Nash, M.D., 612/520-5370
MN Dermatologic Society
John Stansbury, M.D., 612/339-3095
MN Chapter, American College of Emergency Physicians
James R. Bishop, M.D., 612/924-5000
MN Academy of Family Physicians
John Sutherland, M.D., 612/373-8539
MN Component, American Society of Internal Medicine
Paul F. Bowlin, M.D., 612/338-0705
MN Society of Internal Medicine
Robert Lindell, M.D., (612) 298-8000

MN Chapter, American College of Physicians
James H. Kelly, M.D., 612/252-5131
MN Neurosurgical Society
Burton Onofrio, M.D., 507/284-2611
MN Society of Neurological Sciences
John Gates, M.D., 612/221-3700
Association of Neurologists of Minnesota
Lawrence Schut, M.D., 612/725-6767
MN Obstetrical and Gynecological Society
Charles J. McCarthy, M.D., 612/227-9141
North Central Occupational Medical Association
David Zanick, M.D., 612/726-1771
MN Academy of Ophthalmology & Otolaryngology
George L. Adams, M.D. 612/373-8846 — OTO
James Trautmann, M.D., 507/284-2511 — OPH

INTERSPECIALTY COUNCIL

Interspecialty Council Representatives (continued)

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Minnesota State Orthopedic Society
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MN Society of Clinical Pathologists
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MN Thoracic Society
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Robert Christensen, M.D., Chairman, Interspecialty Council
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Cancellation of ads must be made before the 10th of the preceding month's issue.

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WANTED: Young family practitioner to join a ten physician group in western Wisconsin. Contact R. M. Hammer, M.D., River Falls, Wisconsin, 54022. Telephone (612) 436-8809 or (715) 425-6701.

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ORTHOPOD-INTERNIST SHARE Health Care Associates, P.A., a physician owned and managed prepaid multispecialty group practice in Minneapolis and St. Paul is now seeking Orthopods and Internists for immediate openings. Salary and benefits are quite competitive. If interested, please send C.V. to: Paul Dorsher, M.D., SHARE Health Care Associates, P.A., 7920 Cedar Avenue South, Bloomington, Minnesota 55420.

(Continued on page 714)

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(Continued from page 713)

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

OCCUPATIONAL MEDICINE — Position available with Mankato Clinic, Ltd. Full range of pre-employment, occupational medicine and emergency duties, along with general practice as desired. All-American community; full range of benefits and liberal time off; salary first year, incentive pay after. For more information, call collect: R.F. Roskens, Adm. or B.C. McGregor, M.D., 507-625-1811.

NEEDED IMMEDIATELY, physicians for General Practice, Internal Medicine specialists and pediatrican for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D., at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

PHYSICIAN OPPORTUNITIES available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

FAMILY PRACTICE ORIENTED multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

PSYCHIATRIST to join progressive multi-specialty group of 50 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: Harris P. Hinderaker, M.D., 101 Willmar Avenue, Willmar, MN 56201.

BOARD ELIGIBLE CARDIOLOGIST interested in establishing an invasive service in a north-central metropolitan, university-affiliated hospital in association with an internists group needed. Interest in internal medicine necessary. Write Minnesota Medicine (743) 2221 University Ave. S.E., Suite 400, Minneapolis, MN 55414.

GENERAL SURGERY RESIDENCY PROGRAM Director needed by 210 physician multispecialty private group practice in central Wisconsin. Board certified general surgeon with subspecialty training and interest in peripheral vascular surgery plus strong academic interests are being considered. This surgeon would join a seven member General Surgery Section with subspecialty expertise and experience. A clinical appointment through the University of Wisconsin Medical School is available as are research opportunities. Please call Gail H. Williams, M.D., Surgery Department Chairman, or Sidney E. Johnson, M.D., Medical Director collect at (715) 387-5609 and (715) 387-5253 respectively or send curriculum vitae to: Gail H. Williams, M.D., Chairman, Department of Surgery; Marshfield Clinic; Marshfield, WI 54449.

MICHIGAN, Upper Peninsula: Full-time emergency position available with an expanding department which has medium volume ED visits. Independent contractual relationship. Flexible scheduling and annual compensation of at least 78K. Previous ED experience and family practice or surgery background desired. Write or call Tom Campbell, Fox Hill Associates, 250 Regency Court, Waukesha, WI 53186; 414/785-6500.

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FAMILY PRACTICE — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTITIONER needed to join solo practitioner and physicians' assistant in Gettysburg, SD. Practice has 6,000 active charts and patients are drawn from a wide area. The 29-bed, local hospital has consulting surgeon, radiologist and pathologist available with easy access to all other specialties. Close to recreation area with excellent water sports, fishing and hunting. For more information, contact David Yecha, M.D., 608 East Garfield, Gettysburg, SD 57442, (605) 765-2431.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

INTERNAL MEDICINE group (two physicians) seek two physicians; must be board certified and active in IM and board eligible in one of following subspecialties: gastroenterology, endocrinology, pulmonary or infectious diseases. First year salary negotiable; after one year arrangements for buy-in to full partnership if mutually agreeable. Contact R.I. Lubin, M.D., 1725 East 19th Street, #501, Tulsa, OK 74114, (918) 745-6990.

POSITIONS AVAILABLE — For qualified physicians in Divisions of Family Practice and Psychiatry — Fergus Falls State Hospital — located in the Heart of Minnesota's 10,000 Lakes, Fergus Falls is a progressive community and provides an excellent health care setting. Consultant staff presently includes 9 family practitioners, 7 psychiatrists, a neurologist, physiatrist, pediatrician, 2 pathologists, and a surgeon — licensed for 206 chemically dependent patients, 135 mentally ill patients, and 256 mentally retarded residents. Fergus Falls State Hospital provides the only adolescent drug and dependency treatment program in the state system. For more information contact — Richard C. Baker, M.D., Medical Director, Fergus Falls State Hospital, Box 157, Fergus Falls, MN 56537 (218) 739-7396.

(Continued on page 716)

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(Continued on page 719)

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Incidence less than 1%—Probable Causal Relationship**

Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis; bronchospasm (see CONTRAINDICATIONS); **Renal:** Acute renal failure in patients with pre-existing significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

Incidence less than 1%—Causal Relationship Unknown**

Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g., epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmias (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schönlein vasculitis; **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with Motrin. (Those reactions occurring in less than 3% of the patients are unmarked.)

**Reactions are classified under "Probable Causal Relationship (PCR)" if there has been one positive rechallenge or if three or more cases occur which might be causally related. Reactions are classified under "Causal Relationship Unknown" if seven or more events have been reported but the criteria for PCR have not been met.

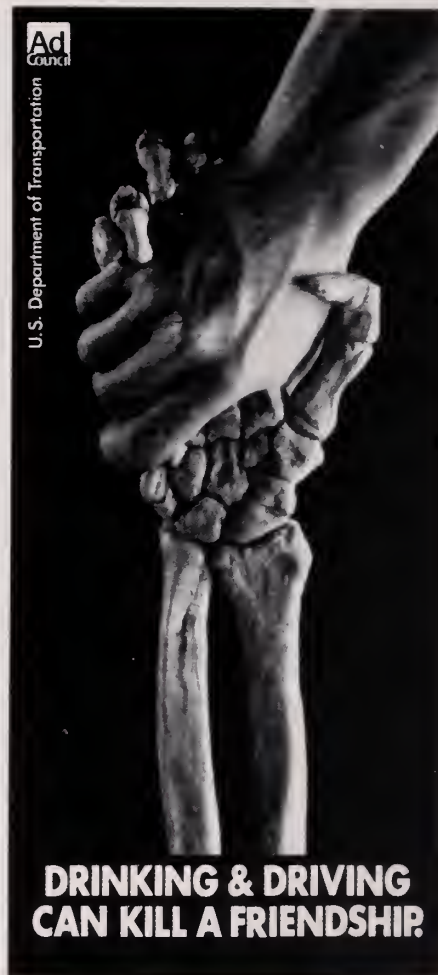
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Balderdash

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Widely reviewed and fairly popular in its time was a book written by John Cowan, M.D. titled *The Science of a New Life*. His work, published in New York by Cowan & Company Publishers in 1874 (1869), was dedicated "To all the Married, but particularly to those who contemplate Marriage." Its 405 pages provided rigid rules for the practice of good and health-promoting habits; had much to say about the married state; and outlined in the strongest of terms his views on temperance, continence, morality, physiological laws, and social evils.

Cowan's discussions concerning the science of the human body, that is anatomy and the process of reproduction, were reasonable for his times and appropriate for a lay audience. Much of the text, however, touts doctrines for achieving "the reproduction of the best, most beautiful and original forms of humanity for this world and the next." His views of procreation which involve these doctrines would now, for the most part, be considered nonsense. Operative factors with elaborate reasoning to support them included climates, occupations, mental associations, gestative influences, obedience to God's spiritual laws, diets, etc. Cowan stated that if his doctrines were observed whatever the desired character and occupation for the conceived child be — they were "not only settled but guaranteed."

A few examples of Cowan's beliefs concerning the "Science of a New Life" and treatments for the "loathsome" diseases are herewith noted.

If a married couple should desire to have their future offspring a fruit-grower "they should together enthusiastically read, study, and — eat fruit" before coition. Or a geologist — "They should together take long walks, into different parts of the country, and study the earth's nature or formation, and especially read, get interested in and admire books on the subject." Or a short-hand reporter — "let the parents obtain the books, learn the art, and together industriously practice it." And so forth "for any other trade or profession in life, from the smallest to the greatest . . ."

The only period in which a child of genius, beauty and strength should be generated is "between eleven and twelve o'clock in the forenoon" on "only a clear, bright day, when the sun is shining" sometime during the months of "August or September." "Conceived under right conditions, a child may be made to take on any form of face and body."

After conception there should elapse "an interval of nearly three years in which no intercourse should be had by the husband or wife." Otherwise, those who indulge their passions invite sickness, suffering, and premature death.

The treatment of gonorrhea in the male consisted only of rest, diet, stoppage of alcohol and tobacco, and bathing in tepid water. If adopted, "this mode of treatment will effect a prompt and permanent cure . . ." Syphilis was to be treated in a similar way with only the substitution of cold water. Such treatments, we are told, will effectively eradicate these diseases from the system.

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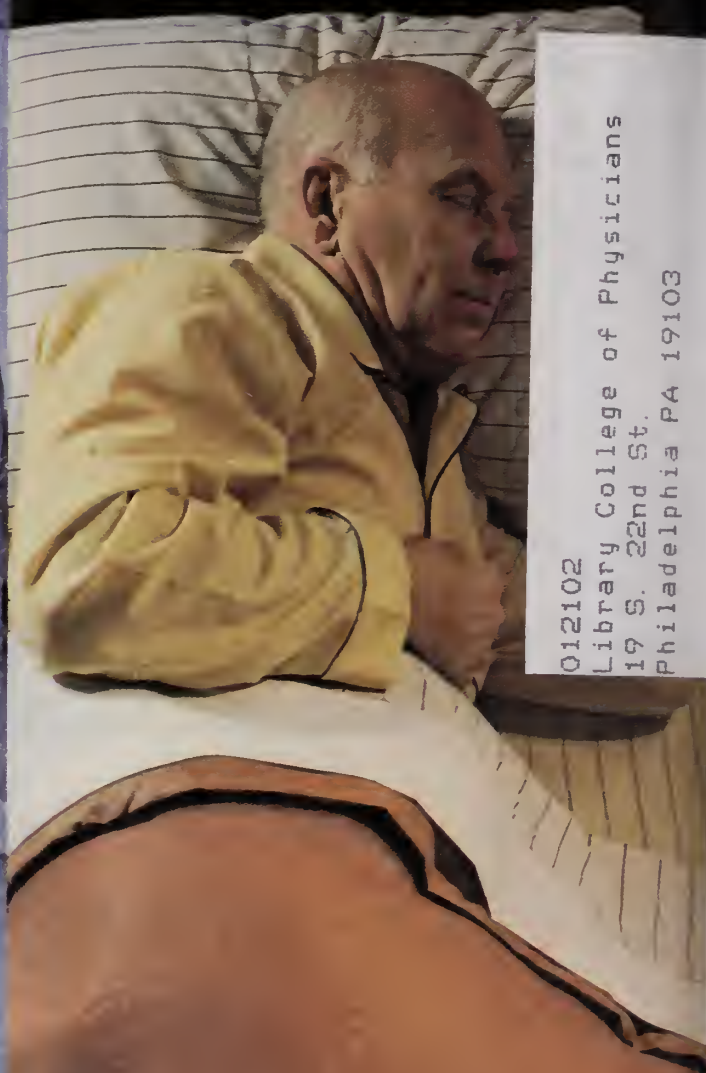
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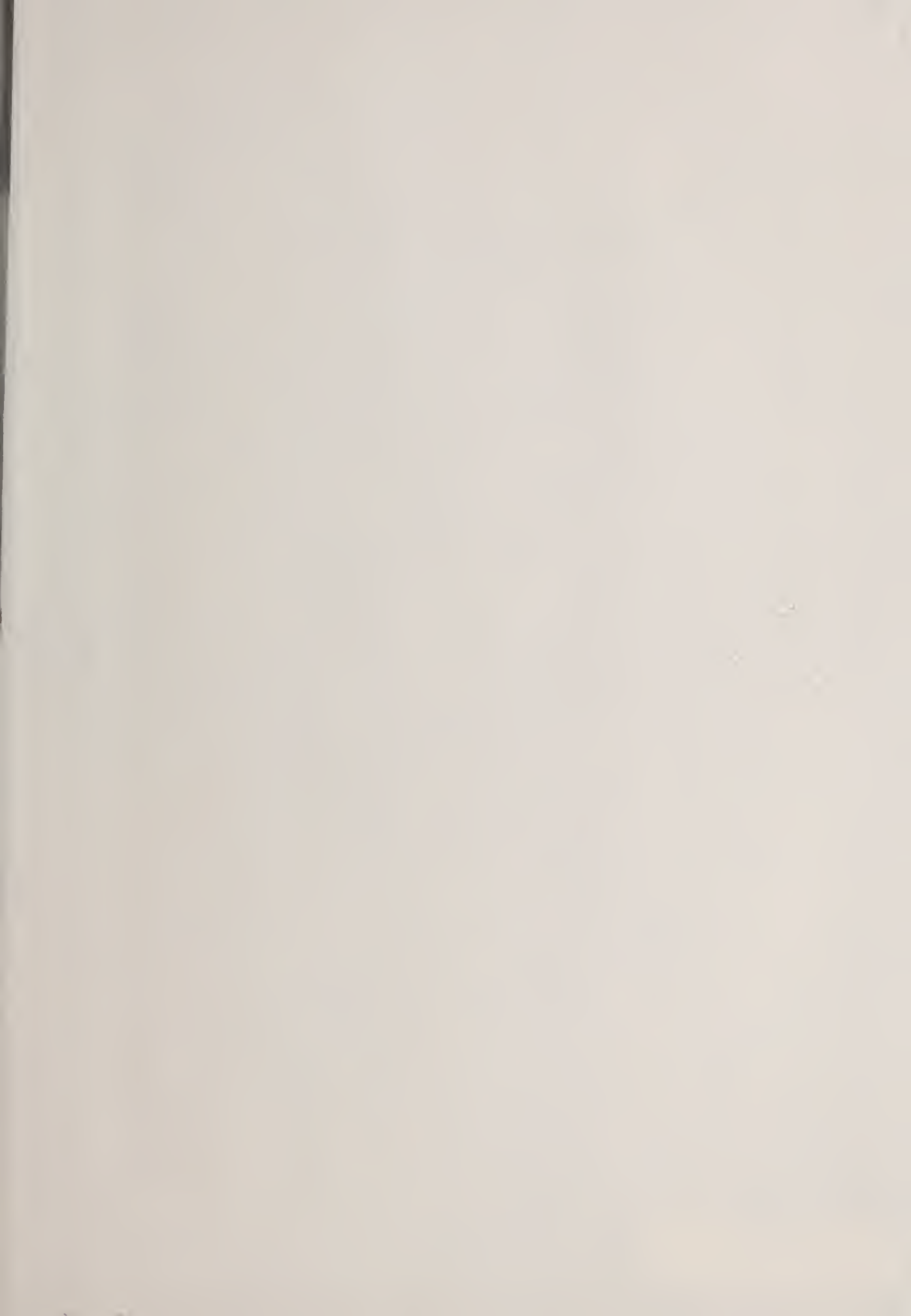
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